Kindergarten Learning Experiences

Elementary School Services
April 2008

Massachusetts Department of Elementary and Secondary Education
350 Main Street, Malden, MA 02148
Phone 781-338-3000 TTY: N.E.T. Relay 800-439-2370
www.doe.mass.edu

This document was prepared by the

Massachusetts Department of Elementary and Secondary Education

Jeffrey Nellhaus
Acting Commissioner

Request information about this document from Elementary School Services
at 781-338-3350 or ess@doe.mass.edu

Massachusetts Department of Elementary and Secondary Education
350 Main Street, Malden, MA 02148-5023
Phone 781-338-3000 TTY: N.E.T. Relay 800-439-2370
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1. Introduction

Kindergarten is a critical year for all children—a year of transition from preschool programs or home to formal schooling. Most children arrive in kindergarten filled with curiosity, wonder, and an enthusiasm to learn about themselves, others, and the world. A teacher's role and responsibility is to nourish this hunger for knowledge, and to motivate and challenge the students, as well as to protect and nurture them.

The process of learning for children at this age is as important as performance and products. Several studies have demonstrated that high-quality kindergarten programs have long-lasting positive effects on academic achievement.[1] Children who see themselves as competent learners tackle challenges with confidence, and develop attitudes and dispositions that encourage their curiosity and eagerness to learn.

This document, *Kindergarten Learning Experiences*, is intended to guide teachers as they plan and provide diverse learning opportunities that help their students develop a solid foundation for more advanced learning and for life. *Kindergarten Learning Experiences* and links to related resources are also available online at www.doe.mass.edu/ess.

The six chapters following this introduction are the content areas:

- English Language Arts
- Mathematics
- Science and Technology/Engineering
- History and Social Science
- Comprehensive Health
- The Arts

Each chapter is organized into two main sections for its content area:

- an introduction that offers content-specific guidelines for kindergarten-level implementation of the subject material
- kindergarten-level interpretations of selected learning standards from the relevant *Massachusetts Curriculum Framework*,[2] along with suggested activities to implement those standards at the kindergarten level

Together, the learning standards, guidelines, and activities in each chapter constitute "kindergarten learning experiences" that will enhance the quality of kindergarten programs for all children in Massachusetts.

Who Should Use This Document and How Does It Relate to Other Documents?

All teachers, administrators, specialists, and paraprofessionals are encouraged to use this document to plan a developmentally appropriate, standards-based curriculum for all children in kindergarten, and to guide professional development and other activities that improve program quality and address the learning needs of all kindergarten children.

Although designed for professionals, some of the information may be helpful for parents who are concerned about what their children are expected to learn in kindergarten. Faculty of institutions of higher education may also find the information useful for their early childhood teacher preparation programs.

Alignment with the Massachusetts Curriculum Frameworks

Learning activities in each chapter align with the learning standards of the relevant *Massachusetts Curriculum Framework. Framework* learning standards outline expectations for what students should know and be able to do at various grade levels—they provide guidance for the "what" and "when" of students' skills and knowledge. Each content-specific chapter of this document provides information that helps "translate" these learning standards into a curriculum that leads kindergartners to achieve the selected standards at the kindergarten level or at other levels up to grade four.

The age-appropriate activities suggested for most learning standards will help teachers offer diverse experiences across subject areas. These learning activities are *suggestions*, not requirements, and are not intended to limit curriculum options. Activities range in their levels of difficulty from things almost all children will be able to do to more complex activities that may be less accessible for some children. Teachers are encouraged to adapt activities as appropriate, and to be creative in guiding children's learning toward meeting the learning standards. Final decisions about curriculum (which materials are used, curriculum, approaches to curriculum) are made at the district or individual school level. Many learning activities include ideas for reading—Appendix A of this document includes references for all books and stories mentioned in suggested activities.

Please note that when any standard is not followed by a suggested learning activity, that standard is included in the activities following the next listed standard.

Omitted and Combined Standards

Some *Framework* learning standards and items within a standard have been omitted. These specific standards or items were considered less appropriate or essential at the kindergarten level than those that have been included. This does not imply that the missing standards or items cannot or should not be addressed in the kindergarten-level curriculum. Omitted standards and items are listed in the introduction section of each content-specific chapter.

When two standards are easily addressed together at the kindergarten level, they have been combined in this document (e.g., 1.1 and 1.2).

Alignment with the Guidelines for Preschool Learning Experiences

The information in this document is also connected to the *Guidelines for Preschool Learning Experiences*,[3] although there are some differences in approach and format. The alignment between these two documents should encourage continuity of curriculum content from preschool to kindergarten. Because children develop at different rates across domains, come from different backgrounds, and bring a range of skills to kindergarten, teachers may also find that activities in the *Guidelines for Preschool Learning Experiences* are appropriate for some kindergarten children. *Guidelines for Preschool Learning Experiences* may also provide additional ideas from

which to develop kindergarten activities, and curriculum ideas for children with limited preschool experience, for children with special learning needs, and, in some cases, for children whose first language is not English.

Guiding Principles

This document was developed based on the following guiding principles, which teachers and other education professionals are encouraged to adopt as they develop their kindergarten curriculum.

- Children are capable and competent individuals who come to kindergarten with a wide range of backgrounds and experiences. Knowledge of child growth and development is essential for making decisions about appropriate curriculum content for groups and individual children.
- Children need many opportunities for work and play that cultivate their individual styles, recognize their cultures, and accommodate their individual needs.
- All children are capable of learning in a safe, healthy, and stimulating classroom environment. Children gain understanding of the world and society by exploring materials, engaging in physical activities, and interacting with peers and adults.
- The kindergarten curriculum is aimed at the whole child. Children learn to take risks and solve problems, develop relationships, explore new concepts, acquire some academic skills and knowledge, and enhance their physical, social, and emotional competence. They need sufficient time to become involved in projects and investigations to satisfy their own interests. Balancing child-initiated and teacher-selected activities enhances learning.
- Children benefit from rich, multi-sensory learning environments that support different learning styles and kinds of intelligence. They acquire symbolic thought as they represent their ideas and knowledge through drawing, painting, block constructions, dramatic play, speaking, and writing.
- Children are more able to generalize concepts and knowledge when activities connect to real-life experiences. Interdisciplinary thematic units and the project approach promote connections across the curriculum and over time. Connections across developmental domains also help children synthesize, reorganize, and transform knowledge, and develop creative and independent thinking.
- Young children construct values and knowledge through relationships and interactions with dependable adults in their lives. Families are the primary caregivers and educators of their children. Continuity between home and school maximizes learning. When teachers work with families as partners, children’s development and progress is maximized. Connections with the larger community can also benefit children’s academic and personal growth.

Pedagogical Variations

Various instructional strategies based on a variety of learning philosophies are used to help children master academic skills in different schools, classrooms, and even within classrooms.

Constructivist Approach

The constructivist approach is driven by children's interests, social interactions, play, and developmental needs. Constructivists believe that children learn by reconstructing concepts through their own efforts toward mastery. This general approach to early education was promoted by Friedrick Froebels, the German founder of kindergarten ("children's garden"), as well as by theories of development articulated and elaborated by John Dewey, Jean Piaget, and L.S. Vygotsky, along with other more recent work of developmental psychologists and researchers.[4]

Constructivists view child development holistically. Curriculum grounded in overall development partially defines "developmentally appropriate." Through structured and unstructured play, children construct and master the concepts, knowledge, and skills that create the foundation for subsequent learning.[5] Social interaction is considered crucial to development and learning, and is embedded in routines and curriculum.[6] The teacher designs the environment and prepares activities that facilitate learning. The teacher also scaffolds the learning of individual children.

Direct Instruction Approach

The direct instruction approach is based on the idea that children attain academic achievement more quickly and effectively by teaching the explicit knowledge and skills that children need to master school tasks (e.g., how to form letters; recognize phonemes; learn letters, numbers, or procedures for mathematics or science).

Integrating Approaches

Children learn most easily when information is presented in context of familiar experiences, although some specific skills and information are best taught through explicit instruction. Some children respond readily to direct instruction; others best assimilate ideas and knowledge through open-ended projects. Teachers can address children's learning styles and preferences by adjusting their teaching styles and classroom activities to appeal to a range of learning needs.

One way to ascertain what children know and to build on that knowledge is for teachers to embed short periods of explicit instruction within engaging activities. This can be followed by exploration of children's thinking through open-ended questions and activities.

Curriculum and Assessment

Teachers, paraprofessionals, and specialists need to plan together a curriculum and a classroom environment that ensures all children are being challenged at their individual levels of development, including children with disabilities, children with little or no English language knowledge, advanced learners, and children with at-risk factors that might impede their

development or education. For specific suggestions regarding children with disabilities, English language learners, and advanced learners, see "Multiple Curricular Approaches" below.

Children enter kindergarten between the ages of four to six years, depending on the school district, but most kindergarten students function developmentally anywhere between three to eight years of age, depending on the domain (e.g., a child may be accomplished in the area of social-emotional development but be below the average in physical development for his/her age). Considerable individual differences in the children's rates of growth and development of skills are typical and to be expected.

One of a teacher's greatest challenges is to observe, identify, and plan a curriculum that will accommodate individual developmental differences among all the children in their classes. Accomplished teachers know when to stand back, watch, and listen to children's self-talk, conversations with others, and explanations. They also know when and how to encourage children to ask questions and come up with answers or hypotheses. Mistakes are particularly valuable, because they give teachers insight into a child's underlying concepts.

Teachers must be skillful and unobtrusive questioners, drawing on children's observations and insights when possible before imposing their own. They must encourage children to talk about their own reasoning as well as to consider each others reasoning. The more children can personally extend their own activities, the more they will make knowledge their own.

Approaches to Curriculum

Integrated Curriculum

Early learning is multidimensional, and developmental domains are interrelated. Brain research[7] indicates that learning is greater when children's experiences interconnect than when their experiences are separated by subject area. A standards-based curriculum that integrates thematic units and projects (long- and short-term) will allow in-depth investigations of real-world topics,[8] deepening children's understanding and intellectual challenge along the continuum of development.

Play is the heart of an integrated kindergarten curriculum and is the medium through which children learn and develop. Dramatic play allows children to review, integrate, and expand their knowledge and understanding of what they learn and experience. Daily routines such as snack, lunch, and recess help children develop self-help, language, and social skills. Outdoor play, which should be scheduled each day, is essential for gross and fine motor development. Structured play need not be teacher-directed but may include facilitation by the teacher to extend children's ideas and learning.

Differentiated Curriculum

Children come to kindergarten with diverse backgrounds, experiences, and abilities. A one-size-fits-all approach to instruction will most likely slow the progress of some children and be overwhelming to others.[9] Differentiated instruction is an effective way to offer individually, linguistically, and culturally appropriate curriculum that helps all children meet learning goals.[10]

Differentiated instruction is especially important in early childhood programs because the foundations of children's future learning are being constructed. It creates multiple paths by which children of different abilities, interests, and learning needs, and those who come from different backgrounds may absorb, use, develop, and present concepts. A differentiated curriculum also provides opportunities for peer teaching and cooperative learning.[11] Children can take more responsibility and ownership for their own academic growth.

To work with curriculum in this way, teachers must have an understanding of the range of children's knowledge, abilities, and backgrounds in their classroom. Initial and ongoing assessment of readiness, growth, abilities, skills, and interests is needed for functional and successful differentiation.[12]

Observation and Ongoing Assessment

Assessment of young children should start with systematic observation and recording of individual progress that can be used productively for planning and modifying the curriculum. Administrators and teachers should explore various research-based assessment systems (e.g., observations, portfolios of children's work, performance tasks, projects, children's self- and peer-assessment, and valid and reliable standardized instruments) and be trained to use these assessments appropriately. Teachers may also engage children in group projects and other collaborative work to observe what they can do with assistance from other children or from adults, in addition to what they can do independently. Results of any formal assessments should always be shared with parents.

Observation and documentation over time leads to teachers' understanding individual learning styles, strengths, and weaknesses, and helps generate ideas for necessary adaptations and modifications in curriculum and instructional approach.

Classroom Environment

A successful learning environment involves physical space both inside and outside of a classroom that has been arranged to support learning in large and small groups, as well as individually. Materials and furniture are also organized to help children explore and learn.[13] Growing plants and/or keeping animals in the classroom, school, and/or on school grounds helps children establish and maintain contact with nature. The environment should be changed or adjusted throughout the year as children grow and learn.

Classroom Schedule

Daily, weekly, and yearly schedules for kindergarten need to be responsive to children's changing needs and provide the frame for an appropriate curriculum. (Some specific needs of children with disabilities are addressed below.) Daily and weekly schedules will likely change from September to June.

The daily schedule should include

- predictable routines flexible enough to accommodate spontaneous activities
- a balance of active and quiet activities (many young children have short attention spans and need shifts in energy to maintain attention)

- alternating large-group, small-group, and individual activities
- a balance of familiar and novel activities
- time for children to revisit and reflect[14]

Individual children's may require varying amounts of rest. NAEYC recommends that teachers initially plan for a period for children to rest or sleep in a quiet, comfortable space, while offering quiet activities to children who do not need a nap. Many full-day classrooms plan rest periods early in the year and phase these periods out as children's stamina grows.

Meeting Individual Needs

Adaptation of curriculum and classroom plans to meet the specific needs of individual children can be accomplished by a teacher's careful observation and responsive planning. Teachers should consider individualizing curriculum for any student in their classroom. Beyond classroom and curriculum adaptations, teachers need to nurture a positive emotional climate and a sense of community in their classrooms so that all children feel valued and safe.

The sections below include specific suggestions to support the success of children with disabilities, children whose first language is not English, and children who are advanced learners. In addition to the suggested learning activities in this document, the *Guidelines for Preschool Learning Experiences* may provide curriculum ideas for children with special learning needs or, in some cases, for English language learners.

Including Children with Disabilities

For children with disabilities to be successful in school, they must be able to engage in interactions and activities that parallel or approximate those of their peers. Teachers, paraprofessionals, specialists, and parents should plan and work effectively together to respond to specific disabilities that may affect the way children work and learn. Parents have unique insights into their child's behavior and temperament. Specialists contribute professional knowledge and experience.

In Massachusetts, students with disabilities are defined as those with Individualized Education Programs (IEPs); the majority of these children are served in classrooms with their non-disabled peers. Curriculum modifications or adaptations for special equipment or materials may be necessary to accommodate children's disabilities and enable them to participate in regular kindergarten activities. Examples of typical accommodations include the following:

- breaking a complicated task into smaller component parts or reducing the number of steps in the task
- using shorter but more frequent activities and routines
- adding new activities or specific activities
- providing opportunities for interactions with non-disabled peers

Each child's IEP should note the specific adaptations, modifications, and accommodations needed by that child. However, IEP adaptations and services should not interfere with a child's opportunity to participate in the full range of classroom activities. In fact, classroom activities

that are designed with a particular child in mind often benefit all children in the classroom (e.g., allowing children to try activities in multiple ways; providing activities designed to strengthen fine and gross motor skill development).

Including children with disabilities requires teachers, paraprofessionals, and specialists to plan daily and weekly schedules that accommodate individual children's activities and services, while still meeting the needs of the rest of the class. For example, if a speech therapist visits a class three times a week to work with an individual in a small group setting, the teacher could schedule small group and individual work in interest centers for the other children during the speech therapist's session time.

Teaching English Language Learners

Learning one or more new languages during early childhood is a natural process because young children are still acquiring language. Children who are English language learners improve their English language skills through direct, meaningful experiences in which English is comprehensible. Young children typically learn much conversational English through play with peers. They identify objects, people, and events, all of which lead to new words and concepts.

The teacher should provide many opportunities for English language learners to use English in the context of structured activities that allow for feedback from native English speakers. In addition, children whose parents can talk to them at least part of the time in their native language have an excellent opportunity to become bilingual.

Teachers should ensure that resources are available for children with particular needs or who are at risk of not meeting the expectations for typical children. Specialists in language development and/or bilingualism can not only provide instruction to individual children who need language support, but can also model instruction strategies for classroom teachers.

The state's *English Language Proficiency Benchmarks and Outcomes for English Language Learners* (ELPBO)[15] is aligned with the state's English language assessment instrument (MELA-O), and may be used to assess children's progress in developing language skills. This document can also be used to help teachers plan and implement instructional strategies that support English learning. All children will benefit from an enriched language environment in the classroom.

Supporting Advanced Learners

Some children are noticeably advanced in their thinking and development across several domains. Educators should be careful to look beyond superficial characteristics (family circumstances, culture, and language, i.e., stereotypes) in identifying advanced learners. The following are typical characteristics of young children who are advanced learners: [16]

- advanced verbal ability
- advanced/early reading
- strong mathematical skills
- long attention span

- ability to reason abstractly
- asking insightful or advanced questions
- interest in time

For these children, insufficient challenge and curriculum designed for typical kindergartners may lead to boredom and frustration, and they may present behavior problems as a result. Some children learn that they do not have to work to succeed.

A well-designed differentiated and integrated curriculum will meet the educational needs of most kindergarten children. The combination of these approaches engages and advances the learning of children across the developmental spectrum. Enrichment activities are valuable and should be used, but not necessarily just with one or a few advanced learners—most of these activities can benefit all children.

Identification of particularly gifted children may call for consideration of early placement in first grade. Although the persistent belief that children are socially and emotionally harmed by early placement is not consistent with research findings,[17] postponing placement decisions until after kindergarten is probably the safest path for most children. After kindergarten, a child's development tends to become more even and consistent, so that the outcome of grade placement ahead of age-peers is somewhat more predictable.

Family Involvement

Parents and extended families play a crucial role in their children's development. Parents usually want to help their children enjoy reading, writing, and learning, but may need some guidance. Teachers can, for instance, offer "home learning kits" on topics of interest to enhance parents' success in supporting learning at home. Schools could develop parent (and teacher) resource centers, collaborate with local libraries to hold such resources and develop parent-child activities, and encourage families to take advantage of area museums and their resources.

To teach most effectively, teachers should learn about their students' families' lives, their cultures and traditions, parenting styles, educational values and expectations, and ideas about discipline. Research suggests that cultural variations can profoundly affect learning. This knowledge can help teachers adapt or modify their expectations and teaching. For instance, differences in social rules of conversation between a child's home culture and American school culture may inhibit the child's participation in class activities.[18] Cultures also differ in how and when emotions are expressed. Cultural influences should be considered when structuring curriculum and observing behavior.

Some other ways to engage and involve families include scheduling conferences and meetings around parents' schedules; informing families about the curriculum; offering mentoring and support groups; and soliciting feedback and suggestions from families.

Questions for Teachers to Ask Themselves

One method of personal and group professional development is for teachers to reflect on their own practices, and engage each other in discussion and observation. The following questions are

formulated as starting points for reflection or group discussion. Additional subject-specific questions are provided in selected chapters.

- How can I think more systematically and reflectively about my teaching practices and learn from my own and others' experiences?
- How and when do I talk interactively with children and listen to their ideas and feelings?
- Do I schedule or allow enough time for children to think, discuss, and reflect on ideas, experiences, and feelings?
- Am I observant and can recognize "teachable moments" to extend children's reasoning?
- How do I build on children's innate curiosity and their individual and group interests?
- Is my classroom a rich environment that includes displays of art, number sequences, books, and child-made representations of their ideas?
- To what extent do ideas and skills integrate across the curriculum, integrate into ongoing projects, and include multi-sensory and kinesthetic approaches to learning?
- How do my classroom environment and curriculum invite inquiry and exploration?
- Do I encourage children to gather evidence to support their ideas and provide answers to their own questions?
- To what extent is my classroom a learning community where individuals are respected and respectful?
- How have I adapted the environment and modified my curriculum to meet children's individual needs?
- What useful information on individual children do I collect through assessments, and do I use this information to improve and modify my classroom program?
- To what extent do I understand children's families, cultures, and communities, and use that understanding to connect instruction with children's experiences?
- Am I willing to say, "I don't know! How do you think we could find out?"

Conclusion

Supporting high quality education in Massachusetts throughout the early childhood years (birth–age 8) is an investment in the future. To provide the quality of education that children need to succeed takes more than money. As Massachusetts expands to statewide full-day kindergarten, the best return on the state's investment will require well-designed curriculum and assessment systems, effective professional development programs, and knowledgeable technical assistance.

The information in *Kindergarten Learning Experiences* focuses on developing high-quality full-day kindergarten curricula and environments. However, the commitment to actualizing the benefits of quality must be continued through elementary school. The chance to align first-, second-, and third-grade curriculum based on the state's preschool and kindergarten curriculum guidelines is an important opportunity to develop more consistent educational experiences and outcomes for children that will improve their lives.

2. Kindergarten Learning Experiences in English Language Arts

Introduction

The development of language and literacy skills is critical to children's development and success. Research shows that one of the strongest predictors of how a child will perform in school and contribute later to society is progress in learning to read and write.

Aspects of Reading and Writing

Language Development and Vocabulary

There is a continuum of development of language and literacy throughout life, but the most important period, particularly for acquisition of language, occurs before first grade. Vocabulary enhancement is an essential part of a comprehensive language and literacy program that educates children to be successful in oral communication and in emergent writing and reading.

Children begin to grasp language at birth by listening, talking, and interacting. Language skills, narrative abilities, and use of symbols underlying complex thought and expression develop through reading books, singing songs, acting out stories, and talking together. In the classroom, children need time throughout the day and curriculum to practice language and literacy skills. The classroom space should include space intentionally designed to be comfortable and inviting, where children can relax, read, and talk. Reading books aloud and discussing them helps children enlarge their vocabularies and develop concepts of sequence, narrative, and basic knowledge of books. Teachers can help children focus and seek deeper understanding by providing models of questions to ask, and then guiding them toward information that will answer their questions.

Reading

Pleasurable experiences with books are essential for children to become readers for life. Reading aloud from different types and levels of literature; giving children opportunities to select, read, and talk about books of their choice; and making new books and materials related to ongoing themes or projects available to students are all ways to instill a love of books in children and to generate discussion. The presence of a range of media throughout the classroom (e.g., labels, books, maps, newspapers, photographs, tapes, paintings) will fuel children's interest in reading, as will the use of media such as film, music, and computer software. Children should also learn how to use school and community reading resources such as libraries and librarians.

Early reading includes phonemic awareness, phonics, decoding and word recognition, fluency, vocabulary, and comprehension. Effective teachers weave a variety of strategies throughout the curriculum to meet the needs of children across a range of educational and developmental levels. An understanding of the continuum of children's skills and behaviors from preschool through third grade and the developmental sequence of skills is essential to effective teaching (e.g., phonemic awareness is a component of fluency, but separate skills evolve in succession).

Various approaches to teaching can be woven together. Teachers may use direct instruction of specific skills, such as phonics, within a balanced approach to literacy. The larger framework of

supporting literacy involves the integration of reading, writing, listening, and speaking during meaningful activities across content areas throughout the day.

Writing

As children expand their abilities to communicate in speech, they begin to transfer the words and thoughts onto paper. Kindergarten-aged children will vary widely in their readiness to express their ideas in writing and their readiness to read. Reading and writing activities should be designed to allow participation at different levels. Children must have the requisite fine motor development to write successfully, and many children, including those with limited previous writing experience and those with disabilities, may benefit from enjoyable activities that strengthen muscles of the fingers and hands.

Classroom Practices and Strategies

Successful literacy development in kindergarten includes the following classroom and curriculum practices and attitudes:[1]

- high expectations for success in reading and writing
- immersion in language and a print-rich environment
- demonstrations by teachers and peers of meaningful and functional speech, listening, and emergent writing and reading
- systematic instruction of explicit literacy skills in the context of stories, themes, and children's interests
- individual engagement in personally meaningful speaking, listening, writing, and reading experiences in a low-risk, non-judgmental environment
- responses of peers and feedback from adults that encourage children to be comfortable expressing what they know and have learned
- availability of diverse and plentiful books and literacy activity choices that foster children's individual strengths and address their individual weaknesses

Strategies for Working with English Language Learners[2]

Children who are just starting to learn the English language, or children with limited vocabularies, need many opportunities to use language in conversation, look at illustrations and written language in books, and listen to others speak and read aloud. Listening to books with pictures and print read aloud on CDs or tapes may enhance children's understanding and learning, particularly if discussion with peers or an adult is included. The speaking and listening abilities of these students in particular should be closely observed and assessed on an ongoing basis during classroom activities. The "Classroom Practices and Strategies" above are relevant and a non-exhaustive list of suggestions for teaching English language learners is below.

When possible, teaching staff may learn the specific sounds in English that do not occur in a child's native language (e.g., the differences in pronunciation of *b* and *v* in spoken English and Spanish). Once children learn sound-symbol relations, they may practice identifying words, decoding simple texts, and writing in English.

- Build recognition of word families (e.g., *-at* words such as *bat, mat, rat*). Use a limited set of letters to build as many familiar words as possible so children gain fluency quickly and learn about written letters and how they relate to sound patterns.
- Build recognition of high-frequency words whenever possible (e.g., *the, of, are, you*) through listening, reading, and writing. A "word wall" that associates words with meaningful objects and actions may be helpful. This kind of resource can be constructed over time by writing new words on paper and alphabetizing them on a bulletin board.
- Build syntactic and semantic awareness. Young children's attempts to understand any language result in incorrect grammar at first in the attempt to create order and generalize rules (e.g., "I *rided* to the store"). Adults can model proper usage and syntax, and ask children whether words make sense in a sentence rather than just pointing out and correcting errors.
- Pair English language learners with native English speakers. Many times children can understand each other before they are understood by their teachers or other adults.

Questions for Teachers to Ask Themselves

- Do I encourage children to talk and write about personal experiences and ideas?
- Is my curriculum and classroom environment rich in print, literature, and language?
- Do I provide time for children to look, listen, and talk about books?
- Do I integrate writing, speaking, listening, and reading into all content areas?
- Am I familiar with the components of literacy and various strategies of literacy instruction, and do I know how to choose the appropriate strategy to help individual children learn effectively?

Learning Standards for Kindergarten

The following pages illustrate how the learning standards of the *Massachusetts English Language Arts Curriculum Framework* may be implemented in a kindergarten classroom.

Included Learning Standards

The *Framework* divides learning standards into four strands:

- *Language* focuses on speaking and listening, including discussion, questioning and listening, presentation, vocabulary and the structure of the English language.
- *Reading and Literature* includes a broad range of activities that help children learn the foundations of reading, comprehending, and understanding various forms of literature.
- *Composition* focuses on various aspects of writing.
- *Media* considers the evaluation and analysis of written work and introduces different media for presentation.

The learning standards in each strand define what students know and should be able to do in certain grade ranges. At the kindergarten level, some learning standards define what students

should know and be able to do by the end of kindergarten (PreK–K); other learning standards define what students should know and be able to do by the end of grade 2 (PreK–2).

The majority of *ELA Framework* standards from pre-kindergarten through grade 2 have been included in this chapter. Standards defined in the *Framework* as Pre-K–K are directly quoted in this document. Standards that are defined for PreK–2 in the *Framework* begin with the phrase "By the end of grade 2…" The *Framework* text of some these standards has been adapted for kindergarten; most are followed by separate, kindergarten-level interpretations of the standards.

Framework learning standard numbers in this chapter are preceded by two letters: the letter "K" (for "kindergarten") and an initial that represents the standard's strand location (e.g., "R" for Reading and Literature strand standards). For example, K.L.3.1 is this document's kindergarten adaptation of standard 3.1 of the Language strand in the *Framework*.

Excluded Learning Standards

The following standards were considered less appropriate or relevant to children in kindergarten and were omitted from this chapter (see *Omitted and Combined Standards* in chapter 1 for additional explanation):

- *Language:* 3.2
- *Reading and Literature*: 11, 12, 13, 16.3, 17, 18
- *Composition*: 19.4, 20, 21, 23, 25

Organization of Learning Standards in This Chapter

Learning standards are organized in the next section as follows:

Strand (e.g., Language)

A brief overview of academic goals and expectations for the content of this strand

Strand Subcategory (e.g., ***Oral Presentation***)

Learning standard number (e.g., K.L.1.3): Learning standard text [note: for PreK–2 standards, text is modified to be appropriate for kindergarten]

Specific kindergarten interpretation of the standard, if any

- *Example activity that supports the implementation of the standard at kindergarten, if any**

Tips for Teachers or **Connections** to other learning standards, if any

* Any standard not followed by a suggested activity has been included in the activities following the next listed standard (e.g., the activity shown for learning standard K.L.4.2 implements both standards K.L.4.2 and K.L.4.1).

Also note that the level of difficulty for any activity should be modified whenever necessary to best promote an individual child's progress.

Language

Teachers should assess vocabulary development through the course of the year using a variety of activities and conversations that naturally integrate new vocabulary. By the end of the year, children should have acquired a larger vocabulary for communication with peers and adults, as well as some academic language needed for school. Teachers should provide systematic and explicit vocabulary instruction through modeling. Emphasis should be placed on building both "Tier 1" words and concepts (e.g., everyday speech that communicates ideas and emotions) and "Tier 2" words and concepts that are commonly encountered in books.

Discussion

K.L.1.1: By the end of grade 2, students will follow agreed-upon rules for discussion (*raising one's hand, waiting one's turn, speaking one at a time*).

- *Children can draw pictures or select photographs that illustrate or symbolize an agreed-upon rule for discussion (speaking one at a time, waiting one's turn) and describe why this rule is important. Rules may be added or modified as the year goes on.*
- *During discussions, children can use a system for taking turns being the speaker by passing an object (e.g., a "talking stick") to the designated speaker.*

Questioning, Listening, and Contributing

K.L.2.1: By the end of grade 2, students will contribute knowledge to class discussion in order to develop a topic for a class project.

- *Children can contribute to group discussions by offering information or ideas and by asking and responding to relevant questions.*
- *After listening to their teacher read Linnea Riley's book* Mouse Mess*, children can ask and answer questions about family feasts and traditions. An adult can talk to the class about traditions for a celebration or feast in his or her family, then explore similarities and differences with the traditions discussed in* Mouse Mess*, another book, or in different families. The topic of family feasts and traditions can be revisited throughout the year.*

Tips for Teachers: K-W-L Charts
Facilitate and focus discussion on a topic (perhaps starting with a book) by finding out what children Know, what they Want to know, and what they have Learned (a K-W-L chart). Introduce the five "w" questions—what, who, where, when, and why (and how).

Oral Presentation

K.L.3.1: By the end of grade 2, students will give oral presentations about personal experiences or interests, using clear enunciation and adequate volume.

- *Children can tell stories, recite poems, act in informal plays, create puppet plays based on family activities or books, or relate personal experiences in a classroom "show-and-tell."*
- *Children can interview each other and relate the interview information to another child or a small group.*

Vocabulary and Concept Development

K.L.4.1: Students will identify and sort common words into various classifications (*colors, shapes, textures*).

K.L.4.2: Students will describe common objects and events in general and specific language.

- *Children can explore and sort sensory and tactile characteristics of objects and talk about these attributes (e.g., color, shape), and list words related to a category (e.g., footwear types could include slippers, sneakers, sandals; or footwear materials could include leather, plastic, rubber, fabric, fur).*
- *Children can go on a texture hunt and describe the process to the class or in small groups.*
- *Children can play "What's missing?" -- a game in which the group looks at a collection of 6 to 8 objects; one child leaves the room and an object is removed; the child returns and identifies the missing item based on descriptive clues from other children.*

Connections: Attributes and sorting are also addressed in Patterns, Relations, and Algebra strand standards K.P.1 and K.P.2 of Mathematics (chapter 3), and Physical Science strand standards 1 and 2 of Science and Technology/Engineering (chapter 4).

Structure and Origins of Modern English

K.L.5.1: By the end of grade 2, students will use language to express spatial and temporal relationships (*up, down, before, after*).

- *Children can play "I Spy," using spatial directions and relationships to other objects to locate a designated item.*
- *Children can engage in fine and gross motor activities using spatial vocabulary to describe relationships (e.g., "He is behind me;" "A blanket is under the doll;" "Hold the ball over your head").*

Connections: The concept of spatial relationships is also addressed in Geometry standard K.G.4 of Mathematics (chapter 3) and History and Social Science concept and skill K.4 (chapter 5). Temporal relationships are also addressed in History and Social Science concept and skill K.2 (chapter 5).

K.L.5.2: By the end of grade 2, students will recognize that the names of things can also be the names of actions (*fish, dream, run*).

- *Children can create "flip books" with an object on one side and a connecting verb on the other (e.g., "I fish" and "I caught a fish").*
- *Children can draw pictures of words that can be the name of a thing as well as the name of an action (e.g. walk, sail, fish, dream). They can dictate or sound out letters and/or give short descriptions that distinguish between the meanings.*

Tips for Teachers: Writing can accompany this activity and others, with assistance from adults or more advanced peers.

K.L.5.3: By the end of grade 2, students will identify correct capitalization for names and places (*Janet, I, George Washington, Springfield*), and correct capitalization and commas in dates (*February 24, 2001*).

Kindergarten children can demonstrate understanding and knowledge of the alphabet and printed letters, differentiate between some upper- and lowercase letters, and recognize that names begin with capital letters.

- *Children can explore and sort upper- and lowercase letters in various font styles.*
- *Children can circle all the capitalized letters in a paragraph, list, or poem, then discuss why these words are capitalized and identify common locations for capitalized words (e.g., newspaper headlines, cubby labels, titles of books).*

K.L.5.4: By the end of grade 2, students will identify appropriate end marks (*periods, question marks*).

Kindergarten children can recognize and understand that periods separate sentences and question marks indicate questions.

- *Children can assign noises to common punctuation marks (e.g., "whoosh" for a comma, "psst" for a question mark, "quok" for a period) and use those noises when reading stories aloud.*
- *Children can read books with repeated phrases that contain punctuation marks (such as Eileen Christelow's* Five Little Monkeys Jumping on the Bed*), locate and identify the punctuation marks, and learn about the aural difference between a question read aloud versus a statement read aloud by repeating a phrase both as a question and as an exclamation (e.g., "No more monkeys jumping on the bed!"; "No more monkeys jumping on the bed?").*

Formal and Informal English

K.L.6.1: By the end of grade 2, students will identify formal and informal language in stories, poems, and plays.

As kindergarten children listen to examples of formal and informal language read aloud in stories or poems and in daily speech, they can begin to distinguish some examples of formal and informal language, and identify the difference between the two.

- *Children listen to stories and poems that contain informal and formal language and discuss the language used by characters, including dialects.*
- *Children can use puppets and/or props in dramatic play and can choose to speak using formal or informal language based on their individual roles in the play.*

Reading and Literature

Teachers should model some systematic and explicit reading strategies, including asking and answering questions, identifying main ideas, sequencing events, and relating children's known experiences and knowledge to story events.

To build children's fluency in initial-sound recognition for words, teachers may read aloud to students, asking children to listen for words that begin with a specific sound/phoneme. Teachers may also ask children to differentiate words beginning with the same sound from those starting with a different sound.

Teachers should provide systematic and explicit instruction, including modeling, to build children's skills in phonemic blending to read simple one-syllable words, and children's skills at segmenting words into their individual sounds. Techniques to teach letter-sound association for decoding unfamiliar words and recognizing some words by sight include

- identifying individual letters and matching them with corresponding sounds
- pronouncing sounds commonly associated with corresponding letters
- blending onset-rimes to read one-syllable words (e.g., cat, bat, hat)
- blending letter sounds to decode and read one-syllable words
- identifying upper- and lowercase letters by name

Children can use plastic letters, letter cards, and can identify letters in books and other print materials to read their own names, classmates' names, and classroom labels.

Beginning Reading

K.R.7.1: Students will demonstrate understanding of the forms and functions of written English:
- recognize that printed materials convey provide information or entertaining stories;
- know how to handle a book and turn the pages;
- identify the covers and title page of a book;
- recognize that, in English, print moves left to right across the page and from top to bottom;
- identify upper- and lower-case letters;
- recognize that written words are separated by spaces;
- recognize that sentences in print are made up of separate words.

- *Children can take turns leading the reading of a familiar big book or poem by pointing to the text from left to right and top to bottom as the class follows.*
- *Children can draw or paste pictures of objects or actions to create an alphabet book based on the characters and situations in favorite stories, looking at various alphabet books for ideas. For example, they could listen to/read several books in Marc Brown's* Arthur *series to make an Arthur Alphabet Book with one letter per page.*

Tips for Teachers: Teachers may need to do some explicit instruction in mini-lessons during reading/listening or other activities about print concepts, including the modeling of oral reading, drawing attention to words, letters within words, the spacing of words within sentence, and how written words are composed of letters in a defined sequence.

K.R.7.2: Students demonstrate orally that phonemes exist and that they can be isolated and manipulated:
- understand that a sound is a phoneme, or one distinct sound;
- understand that words are made up of one or more syllables;
- recognize and produce rhyming words;
- identify the initial, medial, and final sounds of a word;
- blend sounds to make words.

- *Children can listen to rhymes or rhyming poems (e.g., Mother Goose*, poetry by *Edward Lear and Dr. Seuss), then identify and recite rhyming words as well as identify which words are real and which are made-up.*
- *Children can use their hands or rhythm instruments to match a sound to a syllable in a word or short nursery rhyme, and engage in chanting, rhyming games, and songs that emphasize the sounds of language.*

K.R.7.3: Students will use letter-sound knowledge to identify unfamiliar words in print and gain meaning:
- know that there is a link between letters and sounds;
- recognize letter-sound matches by naming and identifying each letter of the alphabet;
- understand that written words are composed of letters that represent sounds;
- use letter-sound matches to decode simple words.

- *Children can listen to/read alphabet books and books that include alliteration to enhance letter identification and association of letters with their common sounds (e.g.,* Faint Frogs Feeling Feverish and Other Terrifically Tantalizing Tongue Twisters *by Lilian Obligado;* Sheep on a Ship *and* Sheep in a Shop, *both by Nancy Shaw;* Moses Supposes His Toeses Are Roses and 7 Other Silly Old Rhymes *by Nancy Patz); they can also add new words to create alliterative sentences or phrases.*

- *Teachers can read books that contain rhymes (e.g.,* Tog the Dog *by Colin Hawkins), and create charts of word rhymes and families of sounds/rimes; children can write the sounds of letters and use invented spelling to write rhyming words.*

Tips for Teachers: Rimes are letter combinations that remain constant even though the first letter changes, e.g., "at" in /b-at/-/c-at/-/h-at/-/r-at/-/f-at/). Teachers can teach some common sight words (e.g., a, an, the) that serve as the "glue" for connecting words.

Understanding a Text

For imaginative/literary narrative texts:

K.R.8.1: Students will make predictions using prior knowledge, pictures, and text.

- *Children can listen to, sing, and recite songs and rhymes with predictable patterns.*

- *After selecting a book that has been read several times, children can use the illustrations, words, and/or prior knowledge to make predictions about the character or plot (e.g., in* The Enormous Watermelon *by Brenda Parkes, predict what character will appear next; or in* Jump Frog Jump *by Robert Kalan, predict what hazard the frog will encounter next), then draw sequential pictures and write words to represent the story.*

K.R.8.2: Students will retell a main event from a story heard or read.

- *Children can look at a familiar big book with selected words masked out with tape as it is read aloud and take cues from oral language, story structure, and repetitive patterns to predict and identify the hidden words.*

- *Children can retell the main events in correct sequence while using a book as a visual guide, then without looking at the book. In small groups, they could then draw/illustrate and write (at their level of writing) the events in sequence in consecutive frames resembling a strip of film, or act them out.*

Connections: Drama and dramatic presentation are addressed in Theatre standards 1–5 of The Arts (chapter 7).

K.R.8.3: Students will ask questions about the important characters, settings, and events.

- *Teachers can pose questions to children before and after reading a book, ask and model different types of questions (e.g., close-ended and open-ended questions), introduce comprehension-building strategies (e.g., focus on a particular component such as character or setting), clarify meaning, and prompt predictions and questions from children.*

- *Children can ask and answer questions (e.g., who, what, when, where, why, how) about important characters, settings, and events of a story.*

For informational/expository texts:

K.R.8.4: Students will make predictions about the content of the text using prior knowledge and text features (*title, captions, illustrations*).

- *Children can look at the illustrations of unfamiliar informational books or articles and predict what they might learn from the book or article.*
- *Children can explore different kinds of nonfiction (e.g., about animals, people, science, or travel), and say/dictate what they can know about the writing from the title, the illustrations, and their prior knowledge about the topic.*

K.R 8.5: Students will retell important facts from a text heard or read.

- *Children can retell events in sequence of an informational book they have heard or read, collaborate with others to fill out a K-W-L chart, and answer the five "w" questions—what, who, where, when, and why (and how)—for the information in the book.*
- *Children can participate in a follow-up activity that uses the facts of an informational book they have read or heard, or perform research to find new information on the same topic or to check the accuracy of facts of the book.*
- *Children can describe or represent facts from an informational book through drama, drawings, collage, and/or constructions.*

Making Connections

K.R.9.1: By the end of grade 2, students will identify similarities in plot, setting, and character among the works of an author or illustrator.

- *Children can review books by the same author and/or illustrator (e.g., Beatrix Potter, Dr. Seuss, Marc Brown, Jan Brett) and identify similarities and differences across books.*
- *Children can act out, describe, or draw pictures that illustrate an author's character in a new setting.*

K.R.9.2: By the end of grade 2, students will identify different interpretations of plot, setting, and character in the same work by different illustrators (*alphabet books, nursery rhymes, counting books*).

Kindergarten children connect informational and fictional stories to prior knowledge and personal experience.

- *Children can read, listen to, and view a single fairy tale as told by different authors, and/or several books by the same illustrator (e.g., Eric Carle, William Steig, Peter Speir, Chris Van Allsburg, Jan Brett), and make lists of the similarities and differences that they hear and see.*
- *After reading an informational article or book on animals, children can discuss animals they have encountered as pets or in the wild, then write and illustrate an animal book of their own.*

- *Children can collect alphabet or counting books, and compare the ways in which letters and numbers are presented (e.g., different types of fonts; different media used, such as watercolor, collage, photographs).*

Genre

K.R.10.1: By the end of grade 2, students will identify differences among the common forms of literature: poetry, prose, fiction, nonfiction (*informational and expository*), and dramatic literature.

Kindergarten children show that different kinds of books serve different functions and distinguish two genres among fiction, nonfiction, and poetry.

- *Children can listen to stories about a similar topic, including fiction and nonfiction (e.g., animal stories from an Aesop fable, a Thornton Burgess or Rudyard Kipling story, and an informational book or article about the selected animal), then compare the kinds of similarities and differences they noticed in how the animal is portrayed in each.*
- *As children become familiar with works of different genres, make a class list of favorite poems, nonfiction books, fictional stories, etc.*

Poetry

K.R.14.1: By the end of grade 2, students will identify a regular beat and similarities of sounds in words in responding to rhythm and rhyme in poetry.

- *Children can share favorite nursery rhymes or poems with each other, and listen to rhythmic patterns of poems, stories, and chants introduced by the teacher.*
- *Children can predict recurring phrases in stories and songs such as* The Three Little Pigs, The Gingerbread Man, The House that Jack Built, Henny Penny, Rock-a-bye Babies, *and* Ring Around the Rosie, *then identify rhyming words orally, by clapping, or by collectively listing the rhyming words on a blackboard.*

Connections: Responding to rhythm is also addressed in Dance standard 1.3 and Music standard 3.3 of The Arts (chapter 7), and in Patterns, Relations, and Algebra standard K.P.3 of Mathematics (chapter 3).

Style and Language

K.R.15.1: By the end of grade 2, students will identify the senses implied in words appealing to the senses in literature and spoken language.

Kindergarten children identify various senses in imagery from poetry, stories, or spoken language.

- *After the teacher reads a book such as* My Head is Full of Colors *by Catherine Friend, children can identify sensory words that describe mental and actual images; they can then personally express those mental or actual images through painting, use of rhythm instruments, creating a collage of textures or colors, and writing words.*

- *Children can participate in activities using various real materials/substances that appeal to the senses, listing descriptive words about sensory qualities (e.g., sticky dough, gooey mud, scratchy sand, slippery soapsuds).*

Tips for Teachers: Vocabulary and knowledge are built and reinforced when children hear stories (or music) with strong imagery or sensory impressions, then describe and represent those images through art; or when children touch various textures and substances, and learn new words to describe the sensory features (e.g., salty, light or dark color, loud or soft, sticky, slippery, slick, scratchy).

Myth, Traditional Narrative, and Classical Literature

K.R.16.1: By the end of grade 2, students will identify familiar forms of traditional literature (*Mother Goose rhymes, fairy tales, lullabies*) read aloud.

K.R.16.2: By the end of grade 2, students will retell or dramatize traditional literature.

Kindergarten children identify at least two forms of literature, such as nursery rhymes, fairy tales, lullabies, or fables.

- *Children can listen to, compare, and retell traditional nursery rhymes, fairy tales, and fables from American and other cultures relating to indigenous American traditions (e.g.,* Bringing the Rain to Kapiti Plain *by Verna Aardema;* Gift Horse: A Lakota Story *by Nelson).*
- *Children can retell or act out traditional literature through narrative, art, puppetry, or drama.*

Composition

Writing opportunities can be incorporated across the curriculum, along with feedback and short periods of instruction. Children should have opportunities to write every day, and may be helped by adults and by other children to sound out words in context, rather than repeating words in isolation. Writing is a way for children to play with language and make connections with sounds, letters, and words. Children will learn through gradual approximation of adult conventions how writing is used in life, and will learn most easily in the context of social interactions.

Writing

For imaginative/literary writing:

K.C.19.1: Students will draw pictures and/or use letters or phonetically spelled words to tell a story.

K.C.19.2: Students will dictate sentences for a story and collaborate to put the sentences in chronological sequence.

For informational/expository writing:

K.C.19.3: Students will draw pictures and/or use letters or phonetically spelled words to give others information.

- *Children can dictate a story for an adult to write down, or start their own writing based on letters and words they already know, receiving the teacher's assistance to complete their story. They can then read or listen to their story read aloud, choose an order for the sentences or parts of the story, and add illustrations to finish the story.*
- *Each child can contribute a page to a story developed by the class, or improvise the next event in a story as it progresses from student to student.*
- *In consultation with a teacher or peers, children can edit or re-draft a class-created story by crossing out words and substituting others, or by adding or changing illustrations.*
- *Children can create a class newsletter by writing/dictating short articles about school events or news in their families, and deciding how to order the articles.*
- *Children can write or illustrate instructions (a series of steps in a particular order—for instance, a recipe for making a sandwich), based on an experience of making or doing something.*

Tips for Teachers: To grasp and control writing tools, many kindergarten children need to develop their fine motor skills. They can squeeze dough; use hand punches; and/or pick up small objects with fingers, tongs, and tweezers.

Composition: Standard English Conventions

K.C.22.1: Students will print upper- and lower-case letters of the alphabet.

- *Children can examine upper- and lowercase letters, and discuss likenesses and differences.*
- *Children can build awareness of upper- and lowercase letters by examining different fonts used on signs, in favorite books, or on computers, and by experimenting with different writing media, such as paint, chalk, and shaving cream.*

Connections: See Reading and Literature standards K.R.7.1–K.R.7.3 above for other activities.

Composition: Research

K.C.24.1: By the end of grade 2, students will generate questions and gather information from several sources in a classroom, school, or public library.

- *The teacher can invite someone with expertise in a certain topic to visit the class. Before the visit, children can generate a list of questions to ask and discuss the order in which to ask the questions. After the visit, children can discuss how the interview went, what they learned, and what they would still like to know, then look for books and articles or other sources of information to answer their unanswered questions.*
- *Children can select a topic for investigation, create a K-W-L chart, and discuss what they already know, what they want to know, and where they might find more information; they can decide on ways to gather the information, such as asking their parents or peers to*

complete a class-created survey; they can then complete the K-W-L chart using the information they have gathered.

Media

Analysis of Media

K.M.26.1: By the end of grade 2, students will identify techniques used in television (*animation, close-ups, wide-angle shots, sound effects, music, graphics*) and use knowledge of these techniques to distinguish between facts and misleading information.

Kindergarten children distinguish between live action and animation, and know that each is created using different techniques.

- *Children can watch an animated film and a film using live actors, then compare the differences in how the characters move and speak, and in how music and color are used; they can then discuss whether the information gathered is factual or not.*
- *Children can use flip-books to understand the concepts behind film and animation.*
- *After watching video clips of a baseball game, listening to/reading a book on baseball, and viewing baseball cards, children can list which facts about the game(s) and players were emphasized in each form of communication.*

Connections: Reading and Literature standards K.R.8.1–K.R.8.5 above also apply to film and video production.

Media Production

K.M. 27.1: By the end of grade 2, students will create radio scripts, audiotapes, or videotapes for display or transmission.

- *Children can use a tape recorder to make short recordings of peers reciting poems or telling personal stories.*
- *Children can use a video camera to record a class play, then use a TV to play back the recording at a school open house or parent visitation.*

3. Kindergarten Learning Experiences in Mathematics

Introduction

High-quality mathematics programs for kindergarten children build on the many math-related cognitive skills that children develop from birth through approximately six years of age. Mathematics is a way that young children engage with their environment and make sense of their world.

A child's first mathematical understanding is formed through concrete experiences with the real world and with common materials. Long-term mathematical competence and confidence emerge both from children's own questions and their attempts to answer them, and from appropriate challenges set for them. Each child should be encouraged to explore and build on their insights and to communicate those ideas to others. A child's understanding of mathematical concepts should be developed based on relevant personal experiences and classroom activities and instruction.

Classroom Practices and Strategies

Mathematics should be an integral part of the kindergarten classroom, supported by research-based and developmentally appropriate practices. The classroom should include visual displays of numbers linked with quantities, number sequences, books, and child-made representations of number concepts.

The earliest mathematical focuses should be on children's understanding of numerals; one-to-one correspondence; matching quantities to numerals; sequence and seriation; organizing objects into sets and comparing sets; and observing, identifying, and describing patterns. Mathematical concepts are learned through play with appropriate materials, structured activities, and direct instruction. Problem-solving is at the heart of mathematics and can be taught primarily through connections with the world children live in.

Mathematical learning does not evolve in isolation—mathematical thinking and learning can occur throughout the day and during all kinds of activities. Teachers should integrate mathematics across the curriculum. For example, patterns can be represented in many ways (visual, auditory, tactile), through movement, music and literature, block building, visual arts, and other activities. Teachers should also help children recognize mathematical concepts as they occur throughout the day and year. Children may demonstrate their concepts about measurement in sensory activities at the sand or water table, using play dough, or in building block constructions. They may incorporate their thinking about sequence and patterns into dramatic and outdoor play, woodworking (e.g., "first you do this, next you do that"), or when lining up for an activity ("John is first, Mary is second, I am third").

Learning mathematical thinking involves taking risks. For children to develop confidence in their problem-solving abilities, teachers should be supportive in responding to "wrong" answers. In estimation, for instance, teachers should reassure children that being absolutely correct is unnecessary—children may need the opportunity to change their estimates as the activity

evolves. A child's mistakes in mathematical thinking can provide an attentive teacher a helpful "window" into the child's mathematical thinking.

The best teachers take advantage of incidental learning opportunities by building on them and documenting how children demonstrate their understanding of mathematical principles. Children demonstrate progress in different ways; not all children can succeed at, or are interested in, the same thing at the same time. Teachers should carefully observe children's activities and should question children about what they are doing and why. Children's mathematical thinking, language use, and computational skills should be documented over time (e.g., to recognize when a child's estimates are growing increasingly accurate), analyzed, used to develop more complex curriculum activities, and reported to parents.

Some kindergarten children will have had more opportunity than others to learn and use mathematical language. Children with less experience and learning may grasp only one mathematical attribute or concept at a time (e.g., a child may be able to sort green blocks but not green and square ones; a child may be able to count by rote but not understand one-to-one correspondence). Teachers may find the mathematics activities in the *Guidelines for Preschool Learning Experiences* helpful for teaching some of these students.

Learning Standards for Kindergarten

Section 3.2 on the following pages illustrates how the learning standards of the *Massachusetts Mathematics Curriculum Framework* may be implemented in a kindergarten classroom.

Included Learning Standards

The *Mathematics Framework* divides learning standards into the following five strands:

- *Number Sense and Operations*
- *Patterns, Relations, and Algebra*
- *Geometry*
- *Measurement*
- *Data Analysis, Statistics, and Probability*

Learning standards are provided in each strand that define what students know and should be able to do by the end of kindergarten (PreK–K). All *Mathematics Framework* learning standards are included in this chapter. However, some of the "Selected Problems or Classroom Activities" listed in the *Framework* have been omitted (see the *Framework* for the complete list).

Organization of Learning Standards in This Chapter

Learning standards are organized in the next section of this chapter as follows:

Strand (e.g., Measurement)

Learning standard number (e.g., K.N.1): Learning standard text

Specific kindergarten interpretation of the standard, if any

- *Example activity that supports the implementation of the standard at kindergarten, if any**

Tips for Teachers or **Connections** to other learning standards, if any

* Any standard not followed by a suggested activity has been included in the activities following the next listed standard (e.g., the activity shown for learning standard K.P.2 implements both standards K.P.2 and K.P.1).

Also note that the level of difficulty for any activity should be freely modified whenever necessary to best promote an individual child's progress.

Number Sense and Operations

K.N.1: Count by ones to at least 20.

- *Children can use counting in daily activities, e.g., counting items in a shopping list during dramatic play, the number of blocks used in structures, beads on a necklace.*
- *Children can modify or re-write counting rhymes and songs (e.g., "Six Little Ducks," "One Potato, Two Potato") to include counting backward.*
- *Children can use movement and rhythm instruments to reinforce counting and to play games that include counting (e.g., jumping rope).*

Connection: This standard could be combined with Dance standard K.1.3 of The Arts (chapter 7).

K.N.2: Match quantities up to at least 10 with numerals and spoken words.

- *Children can learn one-to-one correspondence through daily routines and activities (e.g., take attendance, count napkins at snack time, count items in the sand table or the number of children who order lunch).*
- *Children can create games based on representations of numbers from zero to ten (e.g., dice, animal stickers on a card, 3-dimensional objects) to associate quantities with numerals and recognize that numerals are symbols of quantities.*

K.N.3: Identify positions of objects in sequences (e.g., first, second) up to fifth.

- *Children can sing songs or speak rhymes that include ordinal language (e.g., singing "Who is first…fifth?" to the tune of "Where is Thumbkin?").*
- *Children can play memory games in which they view several objects in a line, the objects are removed, and they then replace the objects by identifying which was first, second, or third in line.*
- *Children can listen to stories that include sequences of events (e.g.,* The Three Bears, The Three Little Pigs, Henny Penny*) and then identify the order of events.*

K.N.4: Compare sets of up to at least 10 concrete objects using appropriate language (e.g., none, more than, fewer than, same number of, one more than) and order numbers.

- *Children can organize collections of objects (e.g., seashells) into sets or quantities by putting them in containers or string circles, compare the sets/quantities, and propose reasons for concluding that one set contains more shells, fewer shells, or the same number of shells.*
- *Children can listen to and discuss stories that focus on the concepts of more/less/same (e.g.,* Just Enough Carrots *by Stuart J. Murphy) or concepts related to sets (e.g.,* What Comes in 2s, 3s, & 4s? *by Suzanne Aker,* A Pair of Socks *by Stuart J. Murphy), then re-create these concepts with manipulatives.*

K.N.5: Understand the concepts of whole and half.

- *Children can illustrate concepts of whole and half at snack time by cutting sandwiches in half, or by following a recipe that uses a half stick of butter, or a half cup of liquid.*
- *Children can listen to and dramatize stories that include concepts of whole and half (e.g.,* Eating Fractions *by Bruce McMillan,* Each Orange Had Eight Slices *by Paul Giganti,* The Little Mouse, the Red Ripe Strawberry and the Big Hungry Bear *by Don and Audrey Wood).*

K.N.6: Identify U.S. coins by name.

- *Children can point to coins and name them.*
- *Children can set up a mock grocery store or restaurant in the dramatic play area; create menus, price lists, and coupons worth specified amounts; then practice using coins for purchases. Some children may be able to make change (e.g., accept a dime and give back a nickel).*

K.N.7: Use objects and drawings to model and solve related addition and subtraction problems to ten.

- *Children can play "snack math" using juice boxes, straws, or cups to explore addition and subtraction problems (e.g., "How many cups do I need for everyone to have one?") or, after distributing cups or snacks to some children, can decide how many more cups are needed.*
- *Children can use cubes, rods, or other manipulatives to create various combinations that equal ten.*

K.N.8: Estimate the number of objects in a group and verify results.

- *Children can estimate how many steps it will take to cross the room or how many marbles will fill a container, and then verify their answers by counting (the number could be 20 or less; some children may be able to help others count higher).*
- *Children can read/listen to stories that involve estimation (e.g.,* Who Sank the Boat? *by Pamela Allen;* How Many Bugs in a Box? *by David A. Carter;* Just a Little Bit *by Tompert Ann;* How Many Feet in the Bed? *by Diane Johnston Hamm;* How Much is a Million*, a more advanced book, by David M. Schwartz), then generate questions and activities stimulated by the stories.*

Patterns, Relations, and Algebra

K.P.1: Identify the attributes of objects as a foundation for sorting and classifying (e.g., a red truck, a red block, and a red ball share the attribute of being red; a square block, a square cracker, and a square book share the attribute of being square-shaped).

K.P.2: Sort and classify objects by color, shape, size, number, and other properties.

- *During a daily routine, children can compare, identify, and sort items by one attribute, then be challenged to identify another attribute. For example, from a group of blocks used during building or shelving, they could select blocks of the same shape; then, after*

- *Children can listen to/read books that include sorting concepts (e.g.,* Sorting *by Henry Pluckrose,* The Button Box *by Margarette Reid,* Grandma's Button Box *by Linda Williams Aber), then use buttons to sort and re-create all or part of these stories.*

Connections: The concept of attributes is also addressed in Language standard K.L.4.1 of English Language Arts (chapter 2). Sorting and categorizing are addressed in Physical Sciences standards 1 and 2 of Science and Technology/Engineering (chapter 4).

K.P.3: Identify, reproduce, describe, extend, and create color, rhythmic, shape, number, and letter repeating patterns with simple attributes, e.g., ABABAB…

- *With partners, children can find patterns in the classroom, outdoors, or in photographs that illustrate patterns (e.g., bricks, wood floor, tiles, wallpaper, fabric), then identify the simple patterns (alternating attributes, such as color or shape, or more complex patterns).*
- *Children can create a pattern (ABABAB, ABBABB, etc.) in a way they choose (e.g., clapping a rhythm, stringing beads, arranging manipulatives or paper shapes).*
- *Children can repeat recurring verses in a story, poem, or song, or read or listen to books on the concept of patterns (e.g.,* Pattern *by Henry Pluckrose).*

Connections: The concept of pattern is also addressed in Dance standards 1.3, 2.2, and 2.3; Music standard 4.1; and Visual Arts standard 2.5 of The Arts (chapter 7).

K.P.4: Count by fives and tens at least up to 50.

- *Children can create sets of five or ten objects, separate bundles of five or ten, construct tallies of their data, and estimate and verify the total using an abacus, color-coded cubes, or rods.*
- *Children can count values of five and ten using nickels, dimes, or play paper money in the dramatic play area in the context of a grocery store or bank.*
- *Children can listen to a timer or clock to experience five-minute intervals of a play.*
- *Children can listen to/read stories that include counting by group, such as* The King's Commissioners *by Aileen Friedman, in which the character figures out how to group sets in various combinations.*

Geometry

K.G.1: Name, describe, sort, and draw simple two-dimensional shapes.

- *Children can use play dough to create shapes, play games that include shapes (e.g., "shape bingo").*

- *They can read/listen to and talk about books that focus on shapes (e.g.,* So Many Circles, So Many Squares; Shapes, Shapes, Shapes; Circles, Triangles and Squares, *all by Tana Hoban,* The Shape of Things *by Janine Scott,* The Greedy Triangle *by Marilyn Burns*, or The Missing Piece *by Shel Silverstein*).

  Connections: Shapes are also addressed in Visual Arts standards 2.4 and 2.5 of The Arts (chapter 7).

K.G.2: Describe attributes of two-dimensional shapes (e.g., number of sides, number of corners).

- *Children can investigate different shapes with paper triangles, rectangles, squares, and can divide the manipulatives into groups by shape.*
- *Children can choose blocks of different shapes and colors, then label attributes (e.g., shape, color, side, corner).*
- *Children can count and graph the number of objects in the room that share certain attributes.*

K.G.3: Name and compare three-dimensional shapes.

- *Children can compare squares and cubes, circles and spheres, while building with blocks or other real objects in the school.*
- *Children can compare natural objects (leaves, flowers) with previously identified 2- or3-dimensional shapes.*
- *Children can bring examples from home of 3-dimensional shapes (e.g., cylindrical salt, oatmeal, or cornmeal boxes; conical ice cream cones; spherical balls or marbles), then sort and classify them to create a "shape museum."*

Connections: Two- and three-dimensional shapes and forms are also addressed in Visual Arts standard 1.2 of The Arts (chapter 7).

K.G.4: Identify positions of objects in space, and use appropriate language (e.g., beside, inside, next to, close to, above, below, apart) to describe and compare their relative positions.

- *Children can move their bodies in various directions and positions according to prompts (e.g., move in, out, up, down, around, under, over, beside, and between each other; move through an obstacle course as directed).*
- *Children can take photographs of each other demonstrating positional words and make the photographs into a class book.*

Connections: Geometry is also addressed by Number Sense and Operations standard K.N.8 above; History and Social Science Concept and Skill K.5 (chapter 5); Physical Health standards 2.1 and 2.2 of Comprehensive Health (chapter 6); and Dance standards 1.1–1.3, and 2.1–2.3 of The Arts (chapter 7).

Measurement

K.M.1: Recognize and compare the attributes of length, volume/capacity, weight, area, and time using appropriate language (e.g., longer, taller, shorter, same length; heavier, lighter, same weight; holds more, holds less, holds the same amount).

- *Children can fill containers of different sizes with sand at the sand table to discover which container is heavier or lighter, and which container holds more or less sand (water, objects); later, containers of different shapes might be used.*
- *Children can create activities based on stories that include measurement or comparison (e.g.,* Caps for Sale *by Esphyr Slobodkina,* Length *by Henry Pluckrose).*

K.M.2: Make and use estimations of measurements from everyday experiences.

K.M.3: Use nonstandard units to measure length, area, weight, and capacity.

- *Children can ask questions about—or respond to open-ended prompts from the teacher about—measurements (e.g., "How many steps does it take to walk across the classroom?"; "How many buttons does it take to fill a container?"), verify the answers, then discuss why different individuals or teams came up with different results (i.e., different sizes of feet or footsteps, sizes of buttons, spaces between items), and discuss possible rules for reliable and accurate measuring (e.g., starting at the same beginning, using units that touch, and are uniform in length).*
- *Children can measure a table in hand lengths and discuss the different results; they might learn about the derivation of English words for measurements (a foot is about the length between adult footsteps, a yard about the length of a man's arm), and experiment with and name their own measurement unit.*
- *Children can use containers of various sizes, shapes, and volumes at the sand or water table and then compare them to a standard measurement (e.g., a measuring cup).*

Connections: Also see Number Sense and Operations strand standard K.N.8 above.

Data Analysis, Statistics, and Probability

K.D.1: Collect, sort, organize, and draw conclusions about data using concrete objects, pictures, numbers, and graphs.

- *Children can record/represent meaningful data in a variety of ways, beginning with three-dimensional objects (their own clothes; blocks); then move to two-dimensional representation (pictures, slash marks). Physically graph results (e.g., each child, a pair of shoes represents one piece of data).*
- *Children can collect, record, graph, and interpret data for attendance charts, transportation lists, lunch/snack choices, or other classroom items such as mittens, hats, shoes; some children may be ready to think about the number of mittens versus number of pairs of mittens.*

Connections: See "Skills of Inquiry, Experimentation, and Design" number 5 of the *Massachusetts Science and Technology/Engineering Curriculum Framework.*

4. Kindergarten Learning Experiences in Science and Technology/Engineering

Introduction

Concepts about the world—the beginning of science—begin at birth. Young children, particularly kindergarten-aged children, have inquiring minds and are natural scientists. They enter school with attitudes (e.g., curiosity) and skills (e.g., ability to explore) that make them enthusiastic about learning about the natural and physical world. They wonder about how things work and why things change, and want to experiment, touch, and see what happens. They are treasure chests of "how" and "why" questions about the world around them. Learning about science builds on this period in kindergarten children's development. Science offers children the opportunity to do what comes naturally—observe, question, manipulate objects, and communicate their thinking through actions, words, and drawings or constructions. The more teachers know both about science and how it is learned, the better, but being an expert in science is not necessary to teach science in kindergarten—an inquiry- and exploration-based approach to science allows teachers to explore and learn along with children.

The process of inquiry is how science ideas grow, are tested, and become theories. Kindergarten children

- notice, wonder about, engage with, and learn about the natural world daily
- gather and describe data, and find evidence based on sensory observations and other information
- find patterns, raise questions, and share ideas about their experiences, investigations, and observations

According to the *National Science Education Standards*:[1]

> Inquiry is a multifaceted activity that involves making observations; posing questions; examining books and other sources of information to see what is already known; planning investigations; reviewing what is already known in light of experimental evidence; using tools to gather, analyze, and interpret data; proposing answers, explanations, and predictions; and communicating the results.

To begin shaping the inquiry skills of young children, begin with an observed interest or recent event in the class or at home, a question about something they wonder about, or an idea from a book. Asking and refining questions, reflecting on experience, and communicating with others deepen children's understanding. Learning about science in kindergarten is not about remembering multiple characteristics of many animals, the scientific qualities of rocks, or the names and location of planets in the solar system. Hands-on activities advance children's learning and intertwine with "minds-on" experiences.

By kindergarten, children are becoming aware of technology and how it affects their lives. Children begin to be aware that they could not know about events in other places, or talk to or see distant relatives, without TV, radio, telephones, video cameras, airplanes, etc.

Classroom Practices and Strategies

Children become invested in topics that interest them. Children's discussions, observations, and ideas provide a window into their interests. To engage children, begin building curriculum—daily activities and longer-term projects—based on the things that interest children and that engage their curiosity. Young children hold many misconceptions and formulate their own theories about the natural world, requiring the teacher's time and facilitation to correct misunderstandings.

Often, an adult's first impulse is to identify a child's misconceptions and then provide evidence and correct information, with the underlying assumption is that the child will assimilate this information into his or her thinking. However, five-year-olds do not change their beliefs quickly or easily. One effective approach for teaching science is first to listen to children's ideas (correct or not), take them seriously, and then help them find resources or evidence to support their ideas. By seeking and finding (or not finding) evidence that supports their theories, children learn that their ideas about the world are valued and that explanations of the natural world require more than imagination. This helps children understand that the quest for knowledge continues over time, and learn that changing their minds based on new information is to be expected.

A learning center for science in a classroom should be safe and attractive, frequently change elements and focuses, lead children to investigate and extend their observations through the use of tools, and allow children to describe their findings through representation. It should offer opportunities for children to observe, explore, discuss, document, and compare and contrast materials, events, living things, and ideas. Kindergarten children can collect data and reflect on changes, such as in the growth of a plant. Children can communicate and represent their ideas and experiences through drawing, writing, constructing models, and demonstrations. Notebooks, descriptions, charts, and labels help children organize their thinking while also linking science with literacy.

Contact with nature, preferably out of doors, but also with plants and animals in the classroom, is essential to healthy development of science skills and concepts. For many children in urban and suburban settings, spontaneous and semi-structured experiences in nature are becoming less frequent than in the past. Efforts to ensure that these children have chances to experience the natural world first-hand are critical.

Safety in the classroom is a concern that relates specifically to scientific exploration and experimentation. Appendix VI of the *Science and Technology/Engineering Curriculum Framework*, "Facilities, Safety Practices, and Legal Issues," provides important information regarding classroom safety, including safe practices for working with tools, materials, and living organisms.

Skills of Inquiry and Learning Standards

Section 4.2 on the following pages, Kindergarten Learning Experiences in Science and Technology/Engineering, illustrates how the skills of inquiry and learning standards of the *Massachusetts Science and Technology/Engineering Curriculum Framework* may be implemented in a kindergarten classroom.

Skills of Inquiry

The *Framework* lists Skills of Inquiry to be acquired by students in grades pre-kindergarten through grade 2. These Skills of Inquiry outline positive approaches to the learning process itself, and are the foundation for children's future academic learning—they constitute the basis of how children go about learning in all subjects, not only in science.

Skills of Inquiry are quoted in this chapter directly from the *Framework*, and the suggested activities following the skills provide ways in which kindergarten children can use the skills.

Learning Standards

The *Framework* divides learning standards into four strands:

- *Earth and Space Science*
- *Life Science*
- *Physical Sciences*
- *Technology/Engineering*

The learning standards in each strand define what students know and should be able to do in certain grade ranges. The kindergarten level is included in those learning standards that define what students should know and be able to do by the end of grade 2 (PreK–2). All PreK–2 standards have been included in this chapter and are directly quoted from the *Framework*. Almost all standards have been adapted specifically for kindergarten students.

Organization of Skills and Learning Standards in This Chapter

Skills of Inquiry and Learning Standards are organized in the next section of this chapter as follows (skill numbers are not preceded by strand or subcategory headings):

Strand (e.g., Physical Sciences)

A brief overview of academic goals and expectations for the content of this strand (optional)

Strand Subcategory (e.g., ***Earth's Materials and Weather***)

Skill or learning standard number: *Framework* text

Specific kindergarten interpretation of the skill or standard

- *Example activity that supports the implementation of the skill or standard at kindergarten**

Tips for Teachers or **Connections** to other learning standards, if any.

* Note that the level of difficulty for any activity should be freely modified whenever necessary to best promote an individual child's progress.

Skills of Inquiry

1. By the end of grade 2, students will be able to ask questions about objects, organisms, and events in the environment.

   Kindergarten children will display curiosity and formulate questions about objects, organisms, and events in the world around them.

   - *Children can investigate and experiment with objects and processes using their senses of sight, hearing, smell, touch, and taste; in small groups, they can generate additional questions and follow-up activities that focus on their various senses.*
   - *During whole-group time, children can generate a list of "what would happen if…" questions (e.g., "What would happen if we left a pan of water outside overnight in January?"), then follow up with one or a series of experiments, or with different experiments by small groups.*

   Tips for Teachers: Children are typically full of questions about the natural world, which can turn into an endless series of "why..." Teachers can help children develop questions of greatest interest to them (as a group, or as individuals) into forms that may be answerable (e.g., turn a "why" question into a "what if," "when," "how," and/or "what" question).

2. By the end of grade 2, students will be able to tell about why and what would happen if?

   Kindergarten children will conduct investigations based on their (or teacher-generated) questions (e.g., "What will happen if we put more water in the play-dough recipe?"), then record and represent their observations.

   - *Children can make observations, record them, and use words, pictures, and symbols for that purpose. Results can be used to help children formulate "what if" questions and find out the answers.*
   - *Children may predict the effects of natural processes (e.g., the sun's light or heat on living and non-living things like plants, chocolate, ice), observe, and compare the actual effects with their predictions.*

   Tips for Teachers: When adults ask "why" questions of children, it implies that the adult is asking for a discrete right answer. Adults may try saying instead "why do you think…" to draw out information about children's thinking and what they know about the world. With this knowledge, teachers can guide children toward exploration that represents the next step in their individual thinking about scientific ideas.

3. By the end of grade 2, students will be able to make predictions based on observed patterns.

   Kindergarten children will make guesses and predict what might happen based on observations and past experiences.

- *Children may predict the effects of natural processes (e.g., the sun's light or heat on living and non-living things like plants, chocolate, ice), observe, and compare the actual effects with their predictions.*
- *Children can record their ideas and test their predictions through concrete experiences.*

Connections: Predictions are also addressed by Number Sense and Operations standard K.N.8 and Measurement standard K.M.2 of Mathematics (chapter 3).

4. By the end of grade 2, students will be able to name and use simple equipment and tools (e.g., rulers, meter sticks, thermometers, hand lenses, and balances) to gather data and extend the senses.

Kindergarten children will use and describe tools and equipment needed to gather information.

- *Children can use hand lenses of varying strengths to examine natural objects and materials.*
- *Children can record daily temperatures from an outdoor thermometer and record results over time, and they can compare measured temperatures with sensory indicators of temperature (e.g., hot sidewalks, leaves changing color, snow on the ground).*
- *Children can use a scale to weigh items for sale in a classroom mock grocery store, or can balance the weight of different kinds of objects on a balance scale.*

5. By the end of grade 2, students will be able to record observations and data with pictures, numbers, or written statements.

Kindergarten children can assist in gathering and recording data in various ways.

- *Children can brainstorm data collection methods as a group, then collect, record, and represent collected data in tallies, simple bar graphs, charts, diagrams, drawings, photographs, or journals. Some children might compare and discuss how simple data are displayed in two different forms (e.g., the same data displayed in a bar graph and in pictorial format).*
- *Children can plant birdseed in dirt and water the seed before a week's school vacation; predict and chart how high the seeds will grow during the vacation; then measure growth when they return and compare the actual growth with their predictions.*

6. By the end of grade 2, students will be able to discuss observations with others.

Kindergarten children will learn some appropriate vocabulary for discussing science topics (e.g., weight, height, balance, name specific animals and plants). The vocabulary list can be reinforced when they read/ listen to books or describe observations.

- *After engaging in predicting and observing, children can list their observations and, in small groups, discuss the differences in observed characteristics.*

- *Children can draw pictures or create representations of scientific information (e.g., constructions) and use them to discuss their observations with peers.*

Connection: Discussion is also addressed in Language standard K.L.1.1 of English Language Arts (chapter 2).

Learning Standards

Earth and Space Science

Earth's Materials

1. By the end of grade 2, students will recognize that water, rocks, soil and living organisms are found on the earth's surface.

Kindergarten children will use some appropriate vocabulary to describe and classify natural materials.

- *Children can play word games to describe and classify various forms and attributes of water, rocks, soil, and living organisms.*
- *Children can make charts of plants and animals found locally, and hear vocabulary for common objects, organisms, and events in the environment.*

2. By the end of grade 2, students will understand that air is a mixture of gases that is all around us and that wind is moving air.

Kindergarten children will talk about a few properties of air: that wind is moving air, and that air can move things.

- *Children can observe, discuss, and document the effects of air/wind on objects (e.g., leaves, flags, clouds, smoke from a chimney, bubbles), and can participate in additional experimentation based on using a fan.*
- *Children can represent wind in movement, with or without music.*
- *Children can use tools (paper fans, straws, hand pumps) and/or their own breath to move air by inflating and deflating beach balls, paper bags, or bubbles.*

The Weather

3. By the end of grade 2, students will describe the weather changes from day to day and over the seasons.

Kindergarten children will know some vocabulary for weather, will observe, record, and represent weather conditions (temperature, rain) that change daily; and will observe, record, and represent weather patterns over seasons.

- *Children can create a class journal listing descriptions and/or depictions of daily weather characteristics (e.g., temperature, amount of precipitation, different cloud conditions).*

- *Children can compare the appearances of different types of clouds.*

The Sun as a Source of Light and Heat

4. By the end of grade 2, students will recognize that the sun supplies heat and light to the earth and is necessary for life.

Kindergarten children will learn some properties of the sun and its impact on life on earth.

- *Children can observe the properties of the sun in various ways (e.g., melting of ice or snow, heating of playground equipment or tools in the sun, drying of water in a puddle).*
- *Children can observe and compare the growth of plants in sunny and deeply shaded places to learn the impact of the sun on plant life.*

Periodic Phenomena

5. By the end of grade 2, students will identify some events around us that have repeating patterns, including the seasons of the year, day and night.

Kindergarten children will identify some natural events that have repeating patterns, based on personal experience and observation.

- *Children can choose a natural pattern (e.g., phases of the moon, where and in what phases the moon appears during the day, daily cycle of the sun) from a book they have listened to, learn where to find accurate information about that object or phenomenon, and chart the pattern (where in the sky the sun is when they arrive, at lunch, and when they go home).*
- *Children can listen to and retell stories, folk tales, or creation stories about night and day, and about objects in the sky (e.g.,* One Small Square: The Night Sky *by Donald M. Silver;* Happy Birthday, Moon *by Frank Asch;* Papa, Please Get the Moon for Me *by Eric Carle).*

Life Science (Biology)

Learning about plants and animals is most effective when taught in their natural settings. Observations and questions can be extended through dramatic play, narrative, books, and visual art. A return to the natural world can then stimulate more accurate observations, make connections, and integrate children's learning.

Characteristics of Living Things

1. By the end of grade 2, students will recognize that animals (including humans) and plants are living things that grow, reproduce, and need food, air, and water.

Kindergarten children will understand that living things have similar needs (including humans).

- *Children can talk about needs they have (e.g., food, water, air) in common with plants and animals, then observe and care for plants and small animals (e.g., fish, guinea pigs,*

salamander) as the teacher provides information about appropriate care for each animal or plant.

- *Children can plant different seeds, then create science notebooks with simple charts and drawings that record observations of plant growth. They could bring pictures of themselves as younger children to class and talk about ways in which they have grown and changed.*

2. By the end of grade 2 students will differentiate between living and nonliving things, and will group both living and nonliving things according to the characteristics that they share.

   - *Children can make a class chart listing characteristics of living and non-living things, then create a class mural or individual artwork of living and non-living things.*
   - *Children can go on a nature walk, collect or take photographs of living and non-living things that are discovered on the walk, then sort the objects or photographs into the categories of "living," "once living (dead)," and "never-living" categories (e.g., plastic).*

3. By the end of grade 2, students will recognize that plants and animals have life cycles, and that life cycles vary for different living things.

   Kindergarten children will differentiate some familiar living things that come from seeds or eggs, or that are born live, and identify infant and adult forms of some living things.

   - *Children can match pictures of adult animals with their babies, and listen to stories and informational books about the life cycles of animals, birds, and/or plants (e.g., hatching eggs; growth of kitten to cat, puppy to dog, caterpillar to butterfly; tadpole to frog), according to expressed interests and curiosity.*
   - *Children can use correct vocabulary for phases of the life cycle and for the processes of growth.*
   - *Children can describe seasonal changes in animals and plants, and the effects of seasons on life cycles (e.g., hibernation, breeding, changes in color or coat, behavior, feeding), then talk about changes that humans make seasonally (e.g., dress, activities, lifestyle).*

Heredity

4. By the end of grade 2, students will describe ways in which many plants and animals closely resemble their parents in observed appearance.

   Kindergarten children will describe ways in which animals resemble their parents, and will identify that there are differences in appearances among individual humans, animals, and/or plants.

   - *Children can observe and compare similarities and differences among similar species (e.g., all birds have wings and feathers, but the colors of their feathers can vary; most*

trees have bark and leaves, but the leaves of different kinds of trees have different shapes).

- *Children can investigate other variations and differences within species (e.g., breeds of dogs and cats. bird species).*

Evolution and Biodiversity

5. By the end of grade 2, students will recognize that fossils provide us with information about living things that inhabited the earth years ago.

Kindergarten children will recognize genuine fossils or pictures of fossils.

- *Children can press leaves, shells, and branches into wet sand and play dough; examine the imprints when they dry; and talk about what the imprints tell us about the objects.*
- *Children can listen to/read books about fossils and discuss in small groups what they learned (e.g.,* Fossil *by Claire Ewart,* Fossils Tell of Long Ago *by Aliki).*

Tips for Teachers: Field trips to natural history or science museums, or sites with fossils, would be a good introduction to the topic.

Living Things and Their Environment

6. By the end of grade 2, students will recognize that people and other animals interact with the environment through their senses of sight, hearing, touch, smell, and taste.

Kindergarten children will discriminate among various objects and materials based on sensory experiences, and will use appropriate vocabulary to describe characteristics of objects and materials.

- *Children can record data about the sights, sounds, textures, and smells at different times of the day or in different areas of the classroom or on a field trip, and compare data.*
- *Children can read and discuss books about the senses (e.g.,* The Five Senses *by Keith Faulkner;* The Listening Walk *by Paul Showers;* Sounds All Around *by Wendy Pfeffer;* Night Sounds, Morning Colors *by Rosemary Wells).*

Tips for Teachers: These activities are particularly important for children needing sensory integration experiences (e.g., children with sensory-related disabilities).

7. By the end of grade 2, students will recognize changes in appearance that animals and plants go through as the seasons change.

Kindergarten children will identify some ways that people, animals, and plants change to adapt to the seasons (e.g., dress, appearance, behavior).

- *Children can visit a garden, park, or yard at least once each season to observe and document seasonal changes in plants and animals, using as many senses as possible; then describe or record seasonal changes in animals and plants and seasonal effects on their life cycle (e.g., hibernation, breeding, color, behavior, feeding) and compare with the changes that people make seasonally (e.g., dress, activities, lifestyle).*

- *Children can read stories about seasonal animal behaviors/appearances (e.g.,* Summer Coat, Winter Coat: The Story of a Snowshoe Hare *by Doe Boyle) and retell the stories through dramatization or illustrations.*

8. By the end of grade 2, students will identify the ways in which an organism's habitat provides for its basic needs (plants require air, water, nutrients, and light; animals require food, water, air, and shelter).

Kindergarten children can describe or represent ways that various habitats supply basic needs for plants and animals.

- *Children can experiment with disrupting a plant's habitat (e.g., "What would happen if a plant was placed in a dark closet?"), then record the results.*
- *Children can listen to/read books about habitats of animals and humans around the world (e.g.,* Wildlife Refuge: A Classroom Adventure *by Lorraine Ward;* Animal Habitats: Discovering How Animals Live in the Wild *by Tony Hare).*

Tips for Teachers: Conduct experiments with care for the well-being of animals and plants. This can provide an opportunity to talk about respect for living things.

Physical Sciences (Chemistry and Physics)

Observable Properties of Objects

1. By the end of grade 2, students will sort objects by observable properties such as size, shape, color, weight, and texture.

Kindergarten children will recognize that objects have different observable properties (size, weight, color, texture) and are made of different materials.

- *Children can collect objects that have a common property (e.g., things that are soft, rough, small, or heavy) and share their collections with the class.*
- *The teacher can assemble a basket of objects that could be categorized in different ways; small groups of children could put objects in categories and explain their thinking, or use hoops to create Venn diagrams to compare, sort, discuss, and label the properties of sorted items.*

Connections: The concept of sorting is also addressed in Patterns, Relations, and Algebra standards K.P.1 and K.P.2 of Mathematics (chapter 3) and in Language standards K.L.4.1 and K.L.4.2 of English Language Arts (chapter 2).

States of Matter

2. By the end of grade 2, students will identify objects and materials as solid, liquid, or gas, and will recognize that solids have a definite shape and that liquid and gas take the shape of their container.

Kindergarten children will describe and represent materials as liquids and solids.

- *Children can categorize different substances as liquid or solid (e.g., rocks, wood, oil, water, sand, ice, snow).*
- *Children can observe and talk about the characteristics of materials in different states when playing with water, snow, or ice, and can listen to and use correct vocabulary to describe solids and liquids (e.g., frozen, melted, hot, slippery, runny, breakable).*

Position and Motion of Objects

3. By the end of grade 2, students will describe the various ways that objects can move, such as in a straight line, zigzag, back-and-forth, round-and-round, fast, and slow.

Kindergarten children will know that some objects or creatures move in different ways.

- *Children can play with and observe how various objects and creatures (e.g., marbles, tops, swings, kites, frogs, dogs, birds) move, discuss and describe the different kinds of movements (forward, backward, back-and-forth, fast, slow, straight, zigzag), make predictions about how some objects will move, and record the actual movement of those objects.*
- *Children can represent the ways or patterns in which objects move in drawings, transcribed oral descriptions, dance, or dramatization.*

4. By the end of grade 2, students will demonstrate that the way to change the motion of an object is to apply a force (give it a push or a pull), and will demonstrate that the greater the force, the greater the change in the motion of the object.

Kindergarten children will demonstrate that they know the position and motion of an object can be changed by pushing or pulling.

- *Children can blow on, push, pull, and lift objects and watch the effects, then push objects through water or sand, and over a barrier to observe/feel the effects.*
- *Children can brainstorm ways to move heavy things (e.g., a bag of sand for the sand table, a bucket of water to fill the fish tank or water table), then try out some of their ideas.*

5. By the end of grade 2, students will recognize that under some conditions, objects can be balanced.

Kindergarten children will explore and manipulate a variety of objects and use their own bodies to learn when and how balance is achieved.

- *Children can practice balancing and describe the sensations.*
- *Children can demonstrate or describe ways to balance towers/structures using different-shaped blocks (cylinders, cones, cubes, spheres, arches) or other materials.*

- *Children can use a balance board or scale; place a number of identical objects on each side and observe when the items balance, then increase the number of objects and re-balance; they can also experiment with balancing unlike objects.*

Technology/Engineering

Materials and Tools

1.1: By the end of grade 2, students will identify and describe characteristics of natural materials (e.g., wood, cotton, fur, wool) and human-made materials (e.g., plastic, Styrofoam).

- *Children can be introduced to the concept of "natural" materials; then touch, describe, and use natural materials (e.g., corn husks, acorns, natural sponges, fur, or cork).*
- *Children can explore materials made by humans (plastic, fabric, fake fur, fabricated sponges).*
- *Children can sort natural and human-made materials and create a class book or collage of natural and artificial materials.*

1.2: By the end of grade 2, students will identify and explain some possible uses for natural materials (e.g., wood, cotton, fur, wool) and human-made materials (e.g., plastic, Styrofoam).

Kindergarten children will demonstrate some uses of natural materials and human-made materials.

- *Children can experiment with various materials to determine which works best for a particular purpose (e.g., to wrap a gift; pound or apply pressure, i.e., a hammer; build a snowman; build a tower; contain various materials, e.g., water, sand, building blocks).*
- *Children can construct something several times using materials with different characteristics (e.g., cardboard, wood, straws, spools, newspaper, yarn, Styrofoam, paper).*
- *Children can listen to the story of* The Three Little Pigs*, then discuss the differences and similarities in the uses and durability of natural and human-made materials.*
- *Children can be given common modern man-made tools (e.g., spoon, hammer) and can brainstorm what natural or human-made materials might be used to serve the same purpose (a curved shell for a spoon, a shoe or big block for a hammer); or be given or shown an object and consider different ways it could be used as a tool.*

1.3: By the end of grade 2, students will identify and describe safe and proper use of tools and materials (e.g., glue, scissors, tape, ruler, paper, toothpicks, straws, spools) to construct simple structures.

Kindergarten children will identify and select appropriate tools and materials for various purposes and use them properly and safely.

- *Children can build simple structures using appropriate tools safely, then create a step-by-step guide (e.g., "How I Built My Tower," with Step 1, Step 2, etc. in sequence).*
- *Children can make and post a list of rules in the classroom for the safe and proper use of tools and materials; the list would also describe the reason(s) for each rule. They could teach and help dolls and stuffed animals to use tools properly.*
- *Children can learn the names of tools commonly used during cooking, making art, and other activities; they could then create a dramatic play area with a related theme (e.g., a "fix-it" shop) to build and use vocabulary related to tools.*

Connections: The concept of caring for tools and using them safely is addressed in Appendix IV of the *Massachusetts Science and Technology/Engineering Curriculum Framework*, and in Visual Arts standard 1.4 of The Arts (chapter 7).

Engineering Design

2.1: By the end of grade 2, students will identify tools and simple machines used for a specific purpose (e.g., ramp, wheel, pulley, lever).

Kindergarten children will learn the names of one or more simple machines, and draw, write, talk about, and experiment with them.

- *Children in small groups or pairs can construct ramps using blocks, pipe insulation, or wooden molding, then raise the slope of the ramp and experiment with how far a ball, toy car with wheels, and/or other items will travel. They can then lower the slope of the ramp and repeat. They can chart/record their observations and propose their own explanations of what happened.*
- *Children can look at/read books about construction and machines such as pulleys, levers, wheels, and ramps; make books with drawings or photographs of simple machines; and visit a construction site, describe what people and machines were doing, and learn correct names for some machines and tools.*

2.2: By the end of grade 2, students will describe how human beings use parts of the body as tools (e.g., teeth for cutting, hands for grasping and catching), and compare their use with the ways in which animals use those parts of their bodies.

Kindergarten children will identify tools that are used by humans to extend the body's capacities, and will identify that humans and animals produce similar products (e.g., shelter, webs.) using the tools of their bodies and external tools.

- *Children can observe, compare, and contrast how humans and animals (e.g., butterflies, caterpillars, ants, spiders, dogs or cats, gerbils, fish, hermit crabs) use their body parts as tools to eat, drink, hunt, and move.*
- *Children can observe and compare how animals use their bodies and other materials as tools to build homes; they can also make a book of drawings or photos of animal homes.*

5. Kindergarten Learning Experiences in History and Social Science

Introduction

Children start developing a sense of identity and a sense of their social and individual selves in the early childhood years. Developing social competence—the ability to engage in successful interactions with others and with family, friends, school, and community—is an integral part of children's development. Research indicates that, as early as preschool and kindergarten, the strength of a child's social competence and self-regulation are strong predictors of social and academic competence in later years.

The *Massachusetts History and Social Science Curriculum Framework* states that "at the preschool and kindergarten level, learning in history and social science is built on children's experiences in their families, school, community, state, and country…" A central purpose of this *Framework* is to prepare students to become citizens of a culturally diverse and interdependent world and to participate fully in a democratic society.

Classroom Practices and Strategies

Because many of the concepts related to history and social science are abstract, young children need to build understanding through experiences that are meaningful and connected to their personal experiences. Teachers should consider introducing history and social science through integrated curriculum, across developmental domains. Effective teaching of history and social science includes many opportunities for children to touch, see, hear, discover, experience, and reflect.

At kindergarten, the *History and Social Science Curriculum Framework* is divided into four strands: History, Geography, Civics and Government, and Economics.

History

Understanding history begins with children developing a sense of time and chronology, sequence, understanding concepts of the past, present and future, and concepts of cause and effect in their own lives. Understanding of historical time starts with classroom routines and events, seasonal changes, and children reviewing and documenting memories of what they have done in school and at home.

History is based on factual accounts as well as stories—some true, some partially true, and some untrue or that have changed over time. Teachers should present a balanced view and/or different points of view, depending on the topic, and frame learning activities in terms of historical accuracy and cultural sensitivity. Holidays and traditions should be approached with sensitivity, and some caution. Learning about various traditions and celebrations helps children to develop a sense of connection to others. With diverse ethnic and religious groups in the classroom, a number of different cultures and values may exist. To recognize these differences, holidays and other traditions should be acknowledged in ways that help children understand underlying concepts of peace, unity, and diversity in non-stereotypical ways, emphasizing caring for others, recognizing fairness and injustice, and celebrating with families and friends.

Geography
Understanding geography starts with concepts of location and direction, physical experiences of moving though space, and exploring the environment. These concepts can be advanced by creating maps, and representations of physical space that are manageable and meaningful to children's experiences. Children can identify the characteristics of where they live, and the ways in which people affect the land around them. Even young children build understanding of and respect for others by learning about cultures, languages, people, and places beyond their immediate home, family, and community environments. When studying cultures or celebration, be respectful and develop learning experiences that draw on the cultures in the class or nearby communities.

Civics and Government
The concepts of civics and government are founded in an understanding of rules, fairness, personal responsibilities, freedom, authority, and leadership, as well as concepts of personal character (e.g., honesty, courage, friendship, respect). By working together as a group (e.g., to solve a class problem), young children develop the foundation for understanding democracy.

Economics
Foundational concepts of economics emerge from understanding the various kinds of work people do (outside and inside the home) and the function and use of money, buying, trading, and selling.

Questions for Teachers to Ask Themselves

- Do I help children develop a positive sense of self and relationships to their family and their community?
- Do I guide and extend children's knowledge and understanding about the community and the physical world?
- Do I help children develop respect for and consideration of others whose perspectives and experiences may be different from their own?
- Do I foster social/emotional development by helping children learn to regulate their own emotions and behavior, build social skills with peers and adults, and negotiate social situations and conflicts?
- Do I integrate and build curriculum based on play and dramatization to promote children's mastery of social skills and an emerging understanding of their home, school, and community?

Concepts and Skills / Learning Standards

The following pages illustrate how the concept and skills and the learning standards presented in the *Massachusetts History and Social Science Curriculum Framework* may be implemented in a kindergarten classroom.

The *Framework* concepts and skills and learning standards for pre-kindergarten and kindergarten (PreK–K) define what students know and should be able to do by the end of kindergarten.

Concepts and skills and learning standards are directly quoted in this chapter. The parenthetical letters that follow learning standard text in the *Framework* are not included in this chapter (however, the function of these letters is duplicated by this chapter's renumbering, detailed below).

Concepts and Skills Numbers

Concepts and Skills numbers in this chapter are distinguished from those in the *Framework* by the addition of a "K" (for kindergarten) preceding the *Framework* number. Concepts and Skills for the strands of History and Geography are combined under one heading.

Learning Standard Numbers

Learning standard numbers in this chapter are distinguished from those in the *Framework* by the replacement of the *Framework* "PreK-K" designation by either two or three letters that precede the *Framework* learning standard number:

- "K" is for kindergarten
- One or two initials representing the strand relevant to the standard:
  "H." for History
  "G." for Geography
  "C.G." for Civics and Government
  "E." for Economics

For example, K.C.G.5 in this chapter represents learning standard PreK-K.5 in the *Framework* (which is followed by a parenthetical "C" in the *Framework*).

Organization of Concepts and Skills / Learning Standards in This Chapter

Concepts and Skills and learning standards are organized in the next section of this chapter as follows:

Strand (e.g., Economics)

Concept and Skill or Learning standard number (e.g., K.1 or K.E.9): Concept and Skill or Learning Standard text

- *Example activity that supports the implementation of the Concept and Skill or Learning standard at kindergarten* *

Tips for Teachers or **Connections** to other learning standards, if any

* Note that the level of difficulty for any activity should be freely modified whenever necessary to best promote an individual child's progress.

Concepts and Skills

History and Geography

K.1: Identify sequential actions, such as *first, next, last*, in stories and use them to describe personal experiences.

- *In order to understand the concepts of time, change, and continuity, children can create personal journals describing "What I Did and What I Am Going to Do," illustrated with photos, drawings, and writing, when appropriate.*
- *Children can retell, draw, dictate, or write the sequence of steps in a classroom activity (e.g., cooking recipes, making bubbles, planting, hand washing), the sequence of events in a story, or in a personal experience.*

K.2: Use correctly words and phrases related to chronology and time (*now, long ago, before, after; morning, afternoon, night; today, tomorrow, yesterday; last or next week, month, year; and present, past, and future tenses of verbs*).

- *Children can read/listen to books that describe and illustrate life in the past (e.g.,* Knots on a Counting Rope *by Bill Martin, Jr. and John Archambault,* Children of Long Ago: Poems *by Lessie Little).*
- *Children can read/listen to* The Keeping Quilt *by Patricia Polacco then create a class quilt or canvas representing events over the course of the school year, periodically reviewing the events and when they happened.*
- *Children can create a chronological record of a project over time (e.g., weekly growth of a flower seed or bulb).*

Connections: The concepts of sequential action and temporal relationships are also addressed in Language standard K.L.5.1 and Reading and Literature standard K.R.8.4 of English Language Arts (chapter 2).

K.3: Use correctly the word *because* in the context of stories and personal experiences.

- *In order to grasp the concept of causality, children can read or listen to Aesop's fable of "The Tortoise and the Hare" and explain why the tortoise won the race.*
- *Children can tell, write, or dictate answers to "because" questions based on their own experiences (e.g., "The tower of blocks fell over because _____," "We don't see the sun today because _____").*

K.4: Use correctly words and phrases that indicate location and direction, such as *up, down, near, far, left, right, straight, back, behind,* and *in front of.*

- *Children can plan and conduct treasure hunts in which one child clues another, using directional words, to locate objects in the classroom and/or outside.*
- *Children can construct a system of roadways and buildings using blocks, then use vocabulary to give each other directions to get a car or person from one point to another.*

K.5: Tell or show what a map is and what a globe is.

- *To develop an understanding of maps, children can walk around the school neighborhood, noting stores, trees, and street names; then construct a map as a group; follow the map on a later walk; and revise the map if information is inaccurate.*
- *Children can read/listen to books related to geographical concepts (e.g.,* Me on the Map *by Joan Sweeney,* My Global Address *by Tamara Nunn) and then look at maps or a globe to locate places mentioned in the books.*

Connections: Concepts of space, direction, and relative position are also addressed in Geometry standard K.G.4 of Mathematics (Chapter 3).

Civics and Government

K.6: Give examples that show the meaning of the following concepts: *authority, fairness, justice, responsibility,* and *rules.*

- *Children can brainstorm class rules, discuss the reasons for each rule, choose rules to adopt, create a chart illustrating the rules that are selected, talk about how to help each other follow the rules, and modify or add rules as needed over time.*
- *Children can listen to and look at books illustrating fairness, responsibility, justice, and authority (e.g.,* That's Not Fair *by Stephanie Roehe,* It's Not My Fault *by Nancy Carlson).*

Connections: The concept of personal safety is also addressed in Safety and Prevention standard 11.3 of Comprehensive Health (chapter 6).

Economics

K.7: Use words relating to work, such as *jobs, money, buying,* and *selling.*

- *Kindergarten children can create an alphabet book of jobs illustrated with drawings, photographs or magazine illustrations.*
- *They can dramatize how people obtain products and services by setting up their own restaurant, post office, hair salon, shoe store, or card shop, then choosing roles/jobs, listing materials and supplies needed, and using play money (or credit cards or old checks) for sales and purchases, or by using other items for barter or trade.*

Connections: Teachers can combine this activity with the activity (or other activities involving dramatic play) suggested under Number Sense and Operations standard K.N.6 of Mathematics (Chapter 3).

K.8: Give examples of how family members, friends, or acquaintances use money directly or indirectly (e.g., credit card or check) to buy things they want.

- *Children can read/listen to books focused on general economic concepts (e.g.,* Sam and the Lucky Money *by Karen Chinn,* A Chair for My Mother *by Vera B. Williams,* Estela's Swap *by Alexis O'Neill).*

- *They can discuss and share personal experiences that illustrate various ways they have observed people obtaining things they want.*

Connections: The concept of money is also addressed by Number Sense and Operations, standard K.N.6 of Mathematics (Chapter 3).

Learning Standards

History

K.H.1: Identify and describe the events or people celebrated during United States national holidays and why we celebrate them:
A. Columbus Day
B. Independence Day
C. Martin Luther King Jr. Day
D. Presidents' Day
E. Thanksgiving

- *Children can discuss books about holidays (e.g.,* Follow the Dream: the Story of Christopher Columbus *by Peter Sis*, Independence Day *by Helen Frost*, A Picture Book of George Washington *and* A Picture Book of Abraham Lincoln by *David Adler*, Sarah Morton's Day: A Day in the Life of a Pilgrim Girl *by Kate Waters).*
- *Children can draw, write/dictate, or discuss traditions observed at various holidays, why, and how a holiday is celebrated.*

K.H.2: Put events in their and their families', lives in temporal order.

- *Children can bring in photographs to illustrate and tell family stories or events in chronological order.*
- *In small groups or as a class, children can list and illustrate/represent key events in their day, or keep a running record illustrating events in the school day and year on a mural.*

Connections: Also see Concepts and Skills K.2 above.

Geography

K.G.3: Identify the student's street address, city or town, Massachusetts as the state, and the United States as the country in which he or she lives. Identify the name of the student's school and the city or town in which it is located.

- *Children can learn their own home address, and brainstorm reasons why they need to know it (e.g., to call 911, to prevent being lost), and then learn their state, country, and the name and location of their school.*
- *The teacher can propose putting an address (numbers, letters, or other code) on each cubby or on various centers in the classroom, or set up street names for the school walkways; then discuss the order of the address of each location and use of the words, first, next and last; and can refer to the addresses in various ways during the day.*

- *Children can set up a post office, write or dictate letters to each other, then address, send, and deliver the mail.*

Connections: Home addresses are also in Safety and Prevention standard 9.2 of Comprehensive Health (chapter 6).

K.G.4: Describe the location and features of places in the immediate neighborhood of the student's home or school.

- *Children can take walks around the neighborhood and collaborate to make simple maps, representations, or constructions of the school environment (e.g., yard, neighborhood, community), then role play and give descriptions of locations and features such as the post office, fire station, stores, or bus stops on their map.*
- *They can create a post office in class; check the phone book for their own addresses; make a class address book; create and post "addresses" for different areas of the classroom and/or children's cubbies; and deliver addressed mail to each other.*

Civics and Government

K.C.G.5: Retell stories that illustrate honesty, courage, friendship, respect, responsibility, and the wise or judicious exercise of authority, and explain how the characters in the stories show these qualities.

- *Children can create and use puppets to act out a story about ways to show respect to each other and/or about other characteristics listed in this standard.*
- *Children can read/listen to stories that illustrate courage (e.g.,* All By Myself *by Anne Hines,* Anna Banana and Me *by Lenore Blegvad,* The Buffalo Jump *by Peter Roop,* Harry and the Terrible Whatzit *by Dick Gackenbach) or stories that illustrate character or individual action (e.g.,* Aani and the Tree Huggers *by Jeannine Atkin,* Letting Swift River Go *by Jane Yolen,* The Lorax *by Dr. Seuss).*

K.C.G.6: Identify and describe family or community members who promote the welfare and safety of children and adults.

- *Children can talk about people who help keep children safe (e.g., parents, grandparents, older siblings, police officers, firefighters, teachers, doctors).*
- *Children can discuss what it means to be a hero and find examples from literature, their families, and their community.*

Connections: The concept of community helpers is also addressed in Safety and Prevention standard 9.2 of Comprehensive Health (Chapter 6).

K.C.G.7: Demonstrate understanding that there are important American symbols by identifying

A. the American flag and its colors and shapes
B. the melody of the national anthem
C. the picture and name of the current president
D. the words of the Pledge of Allegiance

- *Children can listen to and read books about American symbols (e.g.,* Red, White, Blue, and Uncle Who? The Stories Behind Some of America's Patriotic Symbols *by Teresa Bateman,* Uncle Sam and Old Glory: Symbols of America *by Delno West).*
- *Children can compare the American flag and flags from around the world, talk about the purpose of flags, where they see American flags, and design a flag for the class with meaningful colors and symbols.*
- *Children can listen to the national anthem and discuss where (or if) they have heard it before and what people do when it is played.*
- *Children can see photos and learn the name of the President, discuss what a president does, and then discuss what responsibilities a "president" of the classroom might have.*

Economics

K.E.8: Give examples of different jobs that people do, including the work they do at home.

- *Children can celebrate an "occupation week" when parents or community guests visit to talk or read a story about their work. Children can interview their guests about their job choices (including work at home), and draw pictures of themselves as adults in their chosen job or profession.*
- *Children can create characters with different jobs and interact in dramatic play as those characters (e.g., create a small community with business people, a policeman, a doctor, parents, teacher, children, and others).*
- *Books children can read or listen to include* Mama and Papa Have a Store *by Amelia Carling, and* Bigmama's *by Donald Crews; after reading, they might create an alphabet book of jobs.*

K.E.9: Explain why people work (e.g., to earn money in order to buy things they want).

- *Children can discuss tasks they are responsible for at home, why people want to work, and what they might personally enjoy about particular jobs.*
- *Children can explore what jobs people do for money and what ones they do without being paid.*

K.E.10: Give examples of the things that people buy with the money they earn.

- *Children can organize a classroom bottle drive or bake sale to raise money for an event (e.g., a pizza and book party) or to donate to a charitable project.*
- *Each child can create a list or book with illustrations or photographs of things they, or a friend, would like to buy (e.g., toys, clothing, a haircut, dance or sports lessons) if they earned money in a job.*

6. Kindergarten Learning Experiences in Comprehensive Health

Introduction

Comprehensive health education includes development of children's physical, mental, emotional, and social health. Brain, body, and cognitive development are critically linked, especially at a young age, and should be addressed in the kindergarten curriculum.

Some overall goals for children's successful development include

- taking turns and sharing
- negotiating and cooperating
- asking for help when appropriate
- making healthy choices
- tolerating frustration
- developing self-esteem
- appreciating other people
- feeling connected
- developing a sense of humor
- using imagination
- knowing right from wrong
- learning from mistakes
- showing feelings appropriately

Physical Growth and Development

Through physical activity and movement, the brain develops the foundations of laterality (left, right), directionality (up, down, in, out), and position in space (over, under, behind). These concepts of pattern and relationship are vital to mathematical thinking as well as to acquisition of reading and writing skills (e.g., seeing how letters are physically formed and fit together in patterns to create words). All children need routine spatial and manipulative activities that stimulate development of sensory integration and appeal to both linguistic and logical development (e.g., music and art activities, dramatic play, creative language play).

To build and strengthen the link between motor development and learning, teachers should encourage physical exploration and experimentation. Kindergarten children need many experiences that integrate body movements with their senses, including kinesthesia (movement), and the vestibular sense (maintaining balance and judging position in space). Experiences that stimulate the inner ear's vestibular area (e.g., rocking, swinging, rolling, turning upside down,

spinning) and the cerebellum support higher cognitive skills.[1] Many children learn best through their kinesthetic sense, which can then be used to connect them with academic learning.

The National Association of Sport and Physical Education has produced physical activity guidelines[2] stating that kindergarten children should

- accumulate at least one hour daily of daily physical activity
- engage in unstructured physical activity whenever possible and should not be sedentary for more than one hour at a time
- develop competence in movement skills that are the building blocks for more complex movement tasks
- have indoor and outdoor areas that meet or exceed recommended safety standards for performing large-muscle activities

Physical development can be maximized by using outdoor and indoor space effectively.[3] Outdoor experiences in nature offer opportunities for active physical exercise and play, and provide opportunities for teachers to observe learning and skill development. For indoors play, a large, open space free of obstacles and/or hazards will facilitate movement and physical development.

Play is more than recess (a word that some interpret as just a break from "real" learning), and should be an integral part of the daily schedule.[4] The Massachusetts Department of Education's Student Learning Time Regulations state that at the kindergarten level, outdoor play, active play, and other forms of play are considered structured learning time.[5]

Teachers and others working with young children should also consider the following guidelines:[6]

- limit adult-child ratios to no more than 9-10 children per adult
- use activities that do not eliminate children and modify activities to maximize participation (e.g., sufficient equipment in number and variety for participation by all)
- include novel experiences that emphasize the same skill (e.g., different contexts allow for gradual development, extension, and refinement)
- employ direct and indirect teaching methods, and respect children's choices
- design movement activities that enhance the overall development of children (motor, cognitive, emotional, and social development)

Gross Motor Skills

Most children acquire laterality prior to kindergarten, but building laterality is still important at kindergarten age. Alternating laterality occurs when children use one side without the use of the other; activities that promote integrated laterality include climbing and descending stairs, or walking and balancing on a low balance beam. One of the last developments in laterality is hand dominance. A child who has not developed fully in this way may use whichever hand is closest to an object or draw on one side of a piece of paper then switch to the other hand to draw on the other side.

Fine Motor Skills

Children must build strength, flexibility, and coordination in the hands and fingers for an appropriate grasp and control of writing/cutting tools. Activities to develop fine motor skills should include movements of the arm and wrist as well as the hand and fingers to build strength. Fine motor activities should be freely available and as unstructured as possible, with adaptations in equipment/use to meet individual needs. If children are not selecting these activities or are not successful, teacher facilitation may be necessary. Children need to practice in order to plan integrated movements. For example, after learning how to climb in one setting, the skill must be adapted and transferred to other climbing situations to be mastered.

Accommodations for Children with Disabilities

Physical activity has a great effect on how children view themselves. All children need opportunities to participate, many of which should minimize competition or elimination. When necessary to include students with special needs or with less developed skills or confidence participate fully in an activity, teachers should modify the environment, equipment, or materials involved (e.g., use bright colors to aid children with visual impairments, provide stability bars to help children hold on, use equipment of smaller size/weight), and/or simplify the activity by breaking it down into smaller steps. Other accommodations might include lowering targets, reducing distances, decreasing the length or intensity of the activity, or increasing rest time.

For children with cognitive disabilities, who are shy, or who have difficulty understanding verbal directions, the teacher can first demonstrate the movements and perform the exercises to model the sequence, starting with one or two movements at a time.

Teachers should fully include children with physical disabilities in movement or dance activities whenever possible, rather than avoiding an activity and thereby implying a lack of faith in a child's ability to adapt (e.g., a child can "kick" a soccer ball using the footrest on a wheelchair; a child using a walker may be able to learn to "jump" rope).[7]

Social-Emotional Development and Mental Health

Young children are just beginning to form concepts of other people and perceptions of themselves as learners and doers, with self-perceptions developing primarily between infancy and age eight. Children's perceptions of their own skills, abilities, and sometimes their "worth," are based on relationships and experiences with others. Adults who teach and care for them must carefully form appropriate expectations and offer appropriate age-related activities based on a researched knowledge of child development.

Six goals are especially important in guiding young children's emotional development:[8]

1. Create a secure emotional environment that enables children to explore and learn.

2. Help children understand emotion, which helps them have insight into their own and others' feelings, and therefore become empathetic and socially competent.

3. Model genuine, appropriate emotional responses, meaning that teachers themselves should show real emotions. With effective models, children are likely to use appropriate ways of showing their feelings.

4. Support children's regulation of emotions by gradually guiding them toward self-regulation, a powerful tool leading to healthy development and positive outcomes.

5. Recognize and honor children's emotional expressiveness and individual expressive styles, which—along with promoting culturally and age-appropriate expression—help children learn in a supportive environment.

6. Help children associate learning with positive emotions, experiencing both the joy and overcoming the frustrations of new learning, which inspires them to tackle hard work, persist at tasks, and seek out challenges.

Positive outcomes grow out of school and classroom climates that foster respect and cooperative problem solving, and that include

- routines presented in a variety of ways to help children understand expectations
- support for children to solve problems, communicate emotions, and build friendships
- recognition that children's difficult behavior may communicate that they need something or cannot articulate their needs, and/or from inappropriate activities or expectations, and is an opportunity for teachers and assistants to interpret problems and plan interventions
- collaboration with families and other caregivers to support consistency for children
- learning of specific skills to resolve conflict, increase flexibility, communicate more effectively, increase self-calming and involvement as a member of a community
- school policies that support social-emotional learning and mental health, including referrals and other interventions

Learning Standards for Kindergarten

Section 6.2 on the following pages illustrates how the learning standards of the *Massachusetts Comprehensive Health Curriculum Framework* may be implemented in a kindergarten classroom.

Included Learning Standards

The *Framework* divides learning standards into the following four strands:

- Physical Health
- Social and Emotional Health
- Safety and Prevention
- Personal and Community Health

The learning standards define what students know and should be able to do in certain grade ranges. Kindergarten expectations are included in the standards for pre-kindergarten through grade 5 (PreK–5).

The majority of PreK–5 standards have been included in this chapter; omitted standards are listed below. Learning standards are directly quoted in this chapter; some are followed by separate, kindergarten-level interpretations.

Excluded Learning Standards

The following standards were considered less appropriate or relevant to children in kindergarten and were omitted from this chapter (see *Omitted and Combined Standards* in chapter 1 for additional explanation):

Physical Health: 1.4, 1.5, 2.4, 2.7, 3.4, 3.5, 3.7, 4.3, 4.4

Mental Health: 5.3, 5.4, 5.5, 5.6, 6.2, 7.2, 7.3, 7.4

Safety and Prevention: 9.3, 9.4, 9.7, 10.3, 10.4, 11.2, 11.4, 12.2., 12.3, 12.4, 12.5, 13.1, 14.3

Organization of Learning Standards in This Chapter

Learning standards are organized in the next section as follows:

Strand (e.g., Physical Health)

Strand Subcategory (e.g., ***Growth and Development***)

Learning standard number: Learning standard text

Specific kindergarten interpretation of the standard, if any

- *Example activity that supports the implementation of the standard at kindergarten, if any**

Tips for Teachers or **Connections** to other learning standards, if any

* Any standard not followed by a suggested activity has been included in the activities following the next listed standard (e.g., the activity shown for learning standard 4.2 implements both standards 4.2 and 4.1).

Also note that the level of difficulty for any activity should be freely modified whenever necessary to best promote an individual child's progress.

Physical Health

Growth and Development

1.1: By the end of grade 5, students will name the external and internal parts of the body and body systems (nervous, muscular, skeletal, circulatory, respiratory, digestive, endocrine, and excretory systems).

- *Children can sing songs/play games that identify body parts or that ask children to move specific parts of their bodies (e.g., "Simon Says" or "Hokey Pokey").*
- *Children can listen to sounds in the body using a stethoscope, label body parts of a model, or identify sense organs on themselves or a model.*
- *Children can read/listen to a book that focuses on part of the body (e.g.,* Dem Bones *by Bob Barner,* The Skeleton Inside You *by Philip Balestrino,* Knuffle Bunny *by Mo Willems).*

1.2: By the end of grade 5, students will identify behaviors and environmental factors that influence functioning of body systems.

- *Children can discuss how temperature and weather affect their bodies (e.g., shivering, goose bumps).*
- *Children can describe how physical activity affects their bodies (e.g., slow or heavy breathing after running or walking).*

1.3: By the end of grade 5, students will identify appropriate accommodations and aids for people with physical disabilities.

Kindergarten children will recognize some devices and aids for people with disabilities.

- *Children can read/listen to stories that include children with disabilities (e.g.,* Smile From Audy *by Nan Holcomb,* We Can Do It! *by Laura Dwight,* Friends in the Park *by Rochelle Bunnett), and have access to games and puzzles about disabilities or to dolls that represent people with disabilities.*
- *Children can illustrate the effects of limited physical or visual abilities (e.g., throw a ball with one arm behind the back; one child assists another who wears a blindfold; one child sits in a wheelchair as another pushes her), and talk about challenges they experienced.*

Physical Activity and Fitness

2.1: By the end of grade 5, students will apply movement concepts including direction, balance, level (high, low), pathway (straight, curve, zigzag), range (expansive, narrow), and force absorption (rigid, with bent knees) to extend versatility and improve physical performance.

Kindergarten children will demonstrate or identify movement concepts, including direction, balance, level, pathway, range, and force absorption.

- *Children can explore movement and balance in structured and unstructured settings, indoors and outdoors, and can use both sides of the body to develop bilateral coordination (e.g., jumping with both feet, lifting with both arms, bouncing a ball using two hands).*
- *Children can practice alternating left and right sides of the body as they climb steps/ladders or pedal a tricycle/bicycle, or by bouncing a ball using one hand and then switching hands.*

Connections: Movement concepts are also addressed by Dance standards 1.1–1.3 of The Arts (chapter 6).

2.2: By the end of grade 5, students will use a variety of manipulative (throwing, catching, striking), locomotor (walking, running, skipping, hopping, galloping, sliding, jumping, leaping), and non-locomotor (twisting, balancing, extending) skills as individuals and in teams.

Kindergarten children will use a variety of fine motor (finger and hand) skills, including strength, flexibility, dexterity, grasp, control, and eye-hand coordination.

- *Children can build upper body strength in various ways (e.g., support body weight with both arms; use arms to pull/push body upwards by doing pushups, bear-, crab-, and seal-walks).*
- *Children can pour water/sand between containers; carry objects at arms' length; draw/write on vertical surfaces (easel, wallboard); make large circles with scarves; and use equipment that requires use of arms (Irish mail, Whirl-O-Wheel®, scooter board).*
- *Children can build sensory/motor integration by playing with sand and water, manipulating play dough or clay, finger painting, and exploring various textures.*
- *Children can develop eye/hand coordination, visual perception, and visual-motor skills by doing lacing cards, by using a marble roll track, or by working with pattern cards for pegs, parquetry blocks, sewing, beading, or weaving.*
- *Children can practice finger dexterity by making necklaces, buttoning, zipping, and snapping fasteners.*

2.3: By the end of grade 5, students will perform rhythm routines, including dancing, to demonstrate fundamental movement skills.

Kindergarten children will demonstrate fundamental movement skills in response to various tempos, beats, and forces.

- *Children can use various movements (e.g., walking, marching, running, hopping, jumping, galloping, sliding) and creative expression to respond to music (e.g., "Limbo," "Animal Rock,"* Carnival of the Animals *by Saint-Saens) or to beats/rhythms provided by drums, tambourine, or other rhythm instruments.*
- *Children can move in various ways with strong/soft movements (e.g., walk or tiptoe lightly to soft music; march to music by John Philip Sousa), using props/accessories (e.g., scarves, streamers, ribbons, balls, hoops).*

Connections: Dance as expression is also addressed in Dance standard 3.1 of The Arts (chapter 6).

2.5: By the end of grade 5, students will explain the benefits of physical fitness to good health and increased active lifestyle.

- *Children can describe verbally or through representations (e.g., drawings) some of the benefits of physical fitness to good health.*
- *Children can describe a favorite activity and how it makes them feel stronger, faster, and/or healthier.*

2.6: By the end of grade 5, students will identify the major behaviors that contribute to wellness (exercise, nutrition, hygiene, rest, and recreation, refraining from using tobacco, alcohol, and other substances).

- *Children can create a timeline, chart, or pantomime of their daily activities and routines, then identify those that relate to wellness.*
- *Children can describe the importance of rest, sleep, and exercise to overall health by brainstorming how they feel or behave after lack of sleep or exercise.*

Nutrition

3.1: By the end of grade 5, students will identify the key nutrients in food that support healthy body systems (skeletal, circulatory) and recognize that the amount of food needed changes as the body grows.

Kindergarten children will recognize different categories of food and that the amount of food needed changes as the body grows.

- *Children can talk about the nutritional value of foods (e.g., milk's calcium builds strong bones and teeth, vegetables provide vitamins, breads and cereals provide fiber); prepare healthy snacks; create a recipe book; or set up a "healthy food" restaurant with menus.*
- *Children can explore diet and activity levels at different stages of a child's life by comparing portion sizes and creating representations (e.g., books, collages, posters, displays, models) of healthy/unhealthy foods for a baby, child, and adult.*

3.2: By the end of grade 5, students will use the USDA Food Guide Pyramid and its three major concepts of balance, variety, and moderation to plan healthy meals and snacks.

Kindergarten children will distinguish among some food categories (meat, vegetables, dairy, and grains) and illustrate that healthy meals include moderate portions and a variety/balance of elements.

- *Children can represent (e.g., paintings, collages) healthy meals and snacks that have balance and variety, or can represent snacks from one section of the food pyramid (e.g., the dairy section with milk, various cheeses, yogurt).*
- *Children can discuss differences in eating habits (e.g., cultural differences, vegetarian diets, special diets followed because of food allergies or religious affiliations) and read/listen to books about common foods and customs across cultures (e.g.,* Everybody

Cooks Rice *and* Everybody Bakes Bread, *both by Norah Dooley;* Bread, Bread, Bread *by Ann Morris).*

Tips for Teachers: Teachers must be aware of and comply with the local district policy regarding food in the classroom. For instance, if children or adults bring in foods from home, teachers should be knowledgeable about individual children's food allergies and make sure that each child has a snack or meal that is safe for him or her.

3.3: By the end of grade 5, students will recognize hunger and satiety cues and how to make food decisions based upon these cues.

Kindergarten children will describe how they recognize their own hunger and fullness, and will illustrate various sizes of meals/snacks.

- *Children can discuss the feelings of full and hungry.*
- *Children can compare the effects of set times versus personally chosen times for eating snacks ; then make a book documenting their observations about hunger sensations (e.g., "at 9:00 I wasn't really hungry," "at 11:00 my stomach was growling").*

3.6: By the end of grade 5, students will describe personal hygiene and safety measures used in preparing foods.

Kindergarten children will describe rules for hygiene and safety in preparing foods.

- *Children can observe signs of fruit decay (e.g., changes in scent, appearance) to learn the action of bacteria, in order to know why personal hygiene and safety measures while preparing foods are important.*
- *Children can explain and practice consistent daily hygiene (e.g., washing hands for 20 seconds to the tune of "Row, Row, Row Your Boat," or "Mary Had A Little Lamb" before and after preparing food and eating).*

Reproduction/Sexuality

4.1: By the end of grade 5, students will identify the components, functions, and processes of the reproductive system.

4.2: By the end of grade 5, students will identify the physical changes as related to the reproductive system during puberty.

Kindergarten children will use some appropriate terminology for body parts and functions of males and females. At this level, children should have a basic awareness of gender, reproduction, and sexuality.

- *Children can receive accurate, age-appropriate answers to questions about reproduction in animals and humans. Answers should relate to children's immediate experiences (e.g., when a teacher or relative is pregnant; when classroom animals produce offspring).*
- *Children can observe physical changes throughout the growth and life cycles of plants and living creatures, including humans, through observation and/or books.*

Tips for Teachers: Prior to developing activities for young children, teachers must be aware of local district policies concerning reproductive education. Family preferences are also a key consideration in planning learning activities. Some districts may require signed parental consent regarding language or content.

Social and Emotional Health

Mental Health

5.1: By the end of grade 5, students will identify the various feelings that most people experience and describe the physical and emotional reactions of the body to intense positive and negative feelings.

Kindergarten children will demonstrate, represent, or label various emotions, especially primary emotions (e.g., happiness, sadness, anger, fear).

- *Children can discuss their personal experiences with emotions and discuss the importance of knowing that it is healthy to have feelings; they can create individual books of photographs of themselves or others showing emotions, or act out emotions.*
- *Children can smile or clench their fists to see if and how they are affected by these physical expressions of feelings.*

5.2: By the end of grade 5, students will apply methods to accommodate a variety of feelings in a constructive manner in order to promote well being.

Kindergarten children will use coping/problem-solving strategies to take or regain control of negative emotions.

- *Children can discuss a conflict; describe their emotions, behavior, and the choices they made; the consequences of their choices; and choices that might have resulted in different outcomes.*
- *Children can list strategies for how to express/deal with feelings, and then create a special area in the classroom where students can go to deal with emotions (e.g., include in the area something like soft pillows or stuffed toys to hug or to "squoosh" to relieve stress).*
- *Children can discuss who they can talk to about their feelings and who is a trusted adult, as a way to reiterate the importance of talking about feelings.*

Family Life

6.1: By the end of grade 5, students will describe different types of families, addressing membership and social influences, and the functions of family members.

Kindergarten children will describe or represent the roles of their own immediate family members, and will describe ways in which various families are the same/different.

- *Children can identify words they speak in English at home and which words they speak in other languages to communicate with extended family members, or they can create*

- *Children can read books about families from around the world (e.g.,* The Keeping Quilt *by Patricia Palacco); then use squares of paper or cloth to draw something that reminds them of their families; connect the squares to make a class "keeping quilt"; and connect all the squares together on a bulletin board.*

Connections: Families are also addressed in History standard K.H.2 of History and Social Science (chapter 5).

6.3: By the end of grade 5, students will identify whom to talk with about family problems and successes.

- *Children can describe or role play scenarios about people in the school and community who might help children (e.g. if they were hurt, worried, or afraid about something), help deal with a family problem, or share in a family's successes (e.g., doctor, clergy, police officer, teacher, guidance counselor).*
- *Children can read or listen to literature that deals with all types of families and their experiences.*

6.4: By the end of grade 5, students will identify what parents do to provide a safe, healthy environment for their children.

- *Children can represent examples of what parents do for their children in stories, visual arts, or informal dramatizations.*
- *Children can make a poster, bulletin board, or book that describes or depicts how parents or guardians provide a safe environment and basic needs (e.g., food, clothing, shelter, medical care), and that describes who provides for them in their own family ("My grownup keeps me healthy by…").*

Interpersonal Relationships

7.1: By the end of grade 5, students will explain why communication is essential in human relationships and identify people from whom children can learn how to communicate, such as family members, friends, community members, and members of faith-based groups.

- *Children can create a "people resource book" that illustrates people they talk to, or they could describe a conversation they consider important that they had with an older person.*
- *Children can assume the teacher's role in a peacemaking situation, sitting down and listening to each person's side, making suggestions for compromise, selecting and trying a suggested solution.*

Safety and Prevention

Disease Prevention and Control

8.1: By the end of grade 5, students will describe how the body fights germs and diseases naturally and with medicines and immunization.

Kindergarten children will demonstrate some understanding that germs relate to diseases, and will identify some ways to avoid common germs.

- *Children can tell or represent personal experiences of well-child visits to a doctor or clinic for immunizations.*
- *Children can read stories about germs and diseases (e.g.,* Germs Make Me Sick *by Melvin Berger,* Wash Your Hands! *by Tony Ross,* Achoo: The Most Interesting Book You'll Ever Read About Germs *by Trudee Romanek).*

8.2: By the end of grade 5, students will identify the common symptoms of illness and recognize that being responsible for individual health means alerting caretakers to any symptoms of illness.

Kindergarten children will recognize the need to tell adults when they are not feeling well.

- *Children can invite the school nurse to talk to the class about symptoms of illness; then turn the dramatic play area into a doctor's office and use props such as a blood pressure cuff, stethoscope, bandages, or masks.*
- *Children can create collages or posters that describe and illustrate personal experiences with illness (e.g., appearance, feelings; and what to do if feeling ill), or those of family or friends.*

8.3: By the end of grade 5, students will apply skills to prevent and control the spread of disease, including those that help promote cleanliness (such as correct hand washing, regular bathing, and washing clothes).

- *Children can observe and practice thorough hand-washing and can list classroom strategies that promote cleanliness.*
- *Children can demonstrate practices to prevent illness and promote health (e.g., covering mouth/nose with arm when coughing/sneezing, throwing away used tissues).*

8.4: By the end of grade 5, students will identify tooth functions and causes of tooth health and decay, and apply proper dental health skills (such as choosing healthy tooth snacks, brushing, flossing).

Kindergarten children will describe or represent dental health skills (e.g., choosing tooth-healthy snacks, brushing, flossing).

- *The teacher can invite a dentist or hygienist to talk to the class about tooth care, then children can ask questions and share personal experiences and stories about brushing teeth and dentist visits.*

- *Children can read books about loose teeth/loss of teeth (e.g.,* Ready Freddy! Tooth Trouble *by Abby Klein,* Junie B., First Grader: Toothless Wonder *by Barbara Park,* Andrew's Loose Tooth *by Robert Munsch) or about dentist visits (e.g.,* Going to the Dentist *by Anne Civardi,* Open Wide: Tooth School Inside *by Laurie Keller).*

Safety and Injury Prevention

9.1: By the end of grade 5, students will list rules for fire safety, weapons safety, bus safety, and seatbelt use where applicable, such as at home, school, community, and play, and explain why the rules are important.

Kindergarten children will describe, represent, or demonstrate critical safety rules or practices in various situations.

- *Children can practice safely entering and exiting a school bus, or responding to school fire alarm.*
- *Children can review safety rules for crossing streets, riding on bikes, in cars, boats, buses, subways, and trains, or using escalators.*

9.2: By the end of grade 5, students will name persons and community helpers (such as police officers, fire fighters, and emergency medical personnel) who can be contacted to help with health, safety, and injury prevention and describe the appropriate procedures for contacting healthcare personnel in an emergency.

Kindergarten children will identify which adults to contact in an emergency, and can practice what to do if lost or in danger.

- *Kindergarten children can identify adults to contact in an emergency and practice what to do if lost or in danger.*
- *They can give complete information about who they are, where they live, and how to contact a parent or relative (i.e., child's full name, full address, parents' names, and phone numbers).*

Connections: Addresses as they relate to geography are addressed in Geography standard K.G.3, and community helpers are addressed in Civics and Government standard K.C.G.6, both of History and Social Science (chapter 5).

9.5: By the end of grade 5, students will demonstrate the use of assertive behavior, refusal skills, and actions intended for personal safety.

Kindergarten children will describe or represent an understanding of the differences among safe, unsafe, and inappropriate touch, and of appropriate assertive behavior to protect their personal safety.

- *Children can use puppets to demonstrate respectful kinds of touching (e.g., shaking hands, giving a high five or pat on the back) and can talk about kinds of touching that do not feel good (e.g., pushing at the top of the slide, shoving in line, grabbing).*

- *Children can role-play strategies to escape a threatening person or unwanted touch (e.g., making a scene, pulling away, shouting, "No! Go away!" or finding a safe adult for protection).*
- *Children can generate a list of class safety rules and behavior; discuss possible responses to bullying, teasing, name-calling, etc., and discuss how to avoid these situations and use assertive behavior to refuse/diffuse them.*

Tips for Teachers: Take care in how these concepts are presented so as not to make children fearful.

9.6: By the end of grade 5, students will follow universal precautions for all first aid involving any blood or other bodily fluids.

Kindergarten children will describe or represent basic rules for universal precautions, and will describe or act out appropriate actions in the event of being injured or of observing an injury.

- *Teachers can facilitate discussion about universal precautions (e.g., not touching blood, urine, feces, or vomit). Children can illustrate how to appropriately handle cuts (e.g., using disposable gloves, gauze, keeping wounds clean, keeping bandages on).*
- *Children can practice treating pretend wounds on dolls or stuffed animal "patients" with first aid supplies.*

Tobacco, Alcohol, and Substance Use/Abuse Prevention

10.1: By the end of grade 5, students will identify and distinguish between substances that are safe and unsafe to be taken by mouth.

Kindergarten children will differentiate between substances that are/are not safe to put in their mouths, and will know to ask an adult when unsure whether a substance is safe.

- *Children can make and play a board game illustrating safe/unsafe items.*
- *Children can use magazine pictures of potentially edible items that are/are not good for you to create a bulletin board of items that are safe or unsafe. "Not good for you" includes both items that are dangerous and those that are not nutritious.*

10.2: By the end of grade 5, students will describe the purpose of medicines (prescription and over-the-counter) and how they can be used or misused in the treatment of common medical problems.

Kindergarten children will tell what the terms "medicine" and "drugs" mean in their own words, and will recognize that medicines should only be taken from or administered by a trusted adult.

- *Children can explain what makes medicines safe or unsafe, and can provide reasons that child protective caps are placed on medicine bottles.*

- *Children can create a poster or list of safety rules and circumstances under which medicines may be taken (e.g., taking medicine only when needed and as directed by a parent or doctor; not taking another person's medications).*

Violence Prevention

11.1: By the end of grade 5, students will describe some of the ways that young children can be intentionally helpful and intentionally hurtful to one another.

- *Children can make a list of "helpful things we see other people do" to acknowledge ways that children are helpful or kind to each other.*
- *Children can describe how it feels to be hurt and how children can avoid being hurtful to one another.*

11.3: By the end of grade 5, students will differentiate between one's personal rights and those of others and use communication and problem-solving to set personal boundaries, resolve conflicts, and develop positive relationships.

Kindergarten children will recognize that they and others have rights, and will describe strategies for resolving conflicts or for preventing their personal rights from being violated.

- *Children can make a list of personal rights (e.g., the right to be respected, to voice opinions, to participate in class activities, to have preferences) and then can create class rules based on those rights.*
- *Children can view pictures of classroom routines and events, and talk about which behaviors are right and which are wrong (e.g., pushing in line).*

Connections: Fairness is also addressed in Civics and Government concept and skill K.6 of History and Social Science (chapter 5).

Personal and Community Health

Consumer Health and Resource Management

12.1: By the end of grade 5, students will identify and describe health careers.

Kindergarten children will describe or represent health career roles/ responsibilities and will use vocabulary related to some health careers.

- *Children can read a "career series" about health care workers (e.g.,* Going to the Doctor *by T. Berry Brazelton,* Going to the Doctor *by Fred Rogers,* Judy Moody, M.D.: The Doctor is In! *by Megan McDonald and Peter Reynolds).*
- *Children can invite health career specialists to talk to the class about their jobs and equipment, then the children can act out roles (e.g., doctor, nurse, EMT, physical education teacher, dentist, nutritionist) in dramatic play.*

Ecological Health

13.2: By the end of grade 5, students will describe how business, industry, and individuals can work cooperatively to solve ecological health problems, such as conserving natural resources and decreasing pollution.

Kindergarten children will describe some ways people can protect the environment.

- *Children can identify things that can be recycled at school and home, and participate in school recycling.*
- *Children can list things to do at home/school to conserve energy or materials and reduce waste (e.g., turning off lights, using both sides of paper).*

Community and Public Health

14.1: By the end of grade 5, students will list the jobs carried out by people at school and in the community that support health and success in school.

- *Children can take pictures of school staff and community members who support health, wellbeing, and success in school (e.g., cafeteria workers, custodians, kindergarten teachers, physical education teachers, guidance counselors, and principals).*
- *Children can play "Who Am I?" in response to various descriptors (e.g., "I take your temperature when you're not feeling well"); after guessing the roles described, they can offer reasons for their guesses.*
- *Children can identify jobs not directly related to health but that support children's wellbeing (e.g., cafeteria workers, physical education teachers).*

14.2: By the end of grade 5, students will identify ways the physical environment is related to individual and community health.

- *Children can identify some things in the familiar physical environment that protect people's health, and identify some products and practices that make life safer.*
- *Children can talk about products that make individual living/activities safer (e.g., seat belts, car seats, air bags, helmets or knee pads for sports), and can discuss actions or conditions that might make people with disabilities unsafe and changes that have been made to assist people with disabilities (e.g., lights that beep for the visually impaired; handicap access).*

7. Kindergarten Learning Experiences in The Arts

Introduction

Expression through the arts is a universal human behavior. Young children are naturally drawn to be creative, and they eagerly explore new methods through which they may express themselves. Children use the arts to explore sensations and to create or recreate imagined or real events. Through what they choose to dramatize, sing, or paint, children can express what is important, joyful, appealing, or frightening in their lives. Because the arts allow children to play with ideas and concepts, they often express in the arts ideas and understandings that do not emerge in other classroom work.

Arts education encourages children's willingness to explore and experiment in other subjects and in life, develops their aesthetic sense, and shows them how to use art to express themselves and to understand their world.

The *Massachusetts Arts Curriculum Framework* supports children as they

- explore dance, music, theatre, and visual arts
- express ideas and feelings through the arts
- develop and sustain their natural curiosity and expressiveness

Children's learning of the arts starts out informally, and is based on incidental and spontaneous learning. Arts education progresses to include both structured learning that is concrete, and free learning that is governed by children's own rules. Gradually, learning in school becomes more formal, refined, and enriched. Children's understanding grows to accommodate information that is more removed in time and space, and that gradually approximates more conventional rule systems.[1] Two aspects of the arts are addressed in comprehensive arts education:

- technique (methods of physical movement, tools and materials, and vocabulary)
- creativity and expression, imagination and ideas

These elements must be merged for children to communicate (with themselves and others) effectively through the arts.

The National Art Education Association described the characteristics and types of learning promoted in quality art programs:[2]

- examining intensively both natural and manufactured object from many sources
- expressing individual ideas and feelings through the use of various art media suited to the developmental level and expressive needs of children
- experimenting in-depth with art materials and processes to determine effectiveness in creating new forms
- working with tools appropriate to the child's abilities and developing skills needed for satisfying aesthetic experiences

- organizing, evaluating, and reorganizing works-in-process to gain an understanding of line, form, color, and texture in space
- looking at, reading about, and discussing a variety of works of art
- seeing artists produce art in a studio
- evaluating art of both students and mature artists, as well as industrial products, home, and community design
- engaging in activities that provide opportunities to apply art knowledge and aesthetics to judgment in personal life and in home or community planning

Teaching and learning in the arts serves several functions, including learning and mastering different art forms for their own sake, and using the arts across the curriculum to integrate and express information, as well as thoughts and feelings. Use of the arts stimulates development of critical thinking skills (e.g., "How can I create this?" "How can I translate this onto paper or into music?" "What materials, tools, or techniques will accomplish this task?") in every subject and throughout life.

The development of learning in the arts follows an upward cycle or spiral, moving from simpler to more sophisticated, from awareness to exploration to inquiry to use.[3] As each more advanced level is reached, new awareness is sparked, which in turn generates a new cycle of learning. Typical kindergartners are engaged at the awareness and exploration stages of the learning cycle, which are vital for them to progress to higher levels of understanding and performance.

Classroom Practices and Techniques

Before being formally introduced to any discipline, children should feel that it is "safe" to try new skills without concerns about "performance." As children progress and gain confidence, teachers can begin to outline or model techniques at a developmentally appropriate level, allowing time for children to practice and refine the skills they are learning.

Originality and Spontaneity

Art can be defined as the use of a variety of media and tools to create works that express ideas and imagination—each child (and each teacher) creates and expresses his/her own meaning. Activities such as connect-the-dots, coloring pages, cutting along pre-drawn lines, or pasting pre-cut shapes have some value in allowing children to demonstrate concepts or skills, but these activities are not art even though children are using art materials.

Valuing Process over Product

Meaningful art activities communicate the message that original expression is valued. While art does support cognitive and academic learning, the primary purpose of the arts is to foster creative expression and imagination, and to help children interpret and represent their thinking and their world in a variety of ways. When adults question a child's work (e.g., "Did you ever see a tree with blue leaves?", "That's good but…," "What is it?"), spontaneity can be undermined. Emphasize the process and meaning of creation and the expression of ideas, rather than the replication of steps, tones, colors, or forms. Some programs (the Reggio Emilia curriculum in

particular) have demonstrated that young children are able to learn more advanced techniques in the visual arts than is commonly expected.

The teacher can emphasize valuing process over product by

- creating open-ended opportunities for the creation of art that encourage originality over conformity
- providing children with appropriate space, materials and sufficient time to experiment with their arts projects (e.g., extended time for practice, opportunities to perform)
- making accommodations for children's individual abilities and needs
- recognizing that not all young children want to, or are ready to, articulate some ideas

Expressiveness and individuality of art may also be drawn out with individual children and small groups with probes or prompts such as "All of you had the same materials—why did using the same materials end up looking different?" or "Tell me about your painting (or dance or music)." The arts section of the *Guidelines for Preschool Learning Experiences* includes activities that may be helpful for some children.

Physical Environment

Teachers should ensure that the physical environment for expression of the arts is safe for the children (e.g., appropriately supervised, free from dangerous objects or slippery surfaces). Additionally, teachers can involve children in developing rules and responsibilities related to time spent in arts education, and can illustrate for them how to show respect in the care of materials.

Assessment

Photographs or videotapes of children engaged in theatre arts, music, or movement and dance can document process, discovery, and outcomes. Visual artwork can be shared with the school and the larger community through displays such as a classroom "gallery" or a library display that exhibits children's artwork. Document what children say or write about their artwork, photos, dramatizations, and dances. Teachers may also use the arts to reach out to and involve families in meaningful way.

Integrating Curriculum

The arts offer many opportunities to integrate curriculum across subject areas. A classroom "word wall" can include vocabulary for all areas of the arts (e.g., dance and music tools/techniques, theatre terminology, visual arts materials/media). Books that include examples of different techniques and materials used in the arts can be made available. Children can talk about the science of materials (e.g., "Where does paper come from?", "What are crayons made from?"). Technology/engineering concepts can be linked to visual art by studying, experiencing, and talking about architecture, the construction of buildings, or mapping out the interior of a building. There are many opportunities to link dance and music to mathematics (e.g., patterns, counting) and science (e.g., inquiry —"What materials around us could be used to sound out a rhythm?").

Learning Standards for Kindergarten

The following pages illustrate how the learning standards of the *Massachusetts Arts Curriculum Framework* may be implemented in a kindergarten classroom.

Included Learning Standards

The *Framework* provides learning standards in the following four disciplines:

- Dance
- Music
- Theatre
- Visual Arts

A separate Arts Connections section in the *Framework* includes learning standards that define how students may investigate the historical and cultural contexts of the arts, the ways that the arts occur in their communities, and the ways in which the arts may help them as they study other disciplines.

Learning standards define what students know and should be able to do in certain grade ranges. Kindergarten expectations are included in the standards for pre-kindergarten through grade 4 (PreK-4). The majority of PreK-4 standards have been included in this chapter; omitted standards are listed below. Learning standards are directly quoted in this chapter; some are followed by separate, kindergarten-level interpretations.

Excluded Learning Standards

The following standards were considered less appropriate or relevant to children in kindergarten and were omitted from this chapter (see *Omitted and Combined Standards* in chapter 1 for additional explanation):

Dance: 1.4, 1.5, 1.7, 1.8, 1.9, 2.4, 2.5, 3.2, 3.3, 3.4, 4.1, 5.2, 5.3

Music: 1.4, 1.5, 2.2, 2.3, 2.4, 3.3, 3.5, 3.6, 4.3, 4.4, 4.5, 5.3, 5.4, 5.5

Theatre: 1.2, 1.5, 2.3, 2.5, 4.2, 5.3, 5.4, 5.5

Visual Arts: 4.3, 5.2, 5.3, 5.4

Arts Connections: 6.1, 8.2, 8.3

Organization of Learning Standards in This Chapter

Learning standards and suggested activities are organized in the next section of this chapter as follows:

Discipline (e.g., **Theatre)**

A brief overview of academic goals and expectations for the discipline (optional)

Discipline Subcategory (e.g., ***Acting***)

Learning standard number: Learning standard text

Specific kindergarten interpretation of the standard, if any

- *Example activity that supports the implementation of the standard at kindergarten, if any**

Tips for Teachers or **Connections** to other learning standards, if any

* Any standard not followed by a suggested activity has been included in the activities following the next listed standard (e.g., the activity shown for learning standard 5.2 implements both standards 5.2 and 5.1).

Also note that the level of difficulty for any activity should be freely modified whenever necessary to best promote an individual child's progress.

Dance

Although dance is a creative art, different forms of dance require different skills and vary in the number of rules that apply. Before performing choreographed dances, children need to be able to watch the dance, "record" it in their minds, practice it, and make connections with the ideas and meanings of the dance (e.g., celebrations, rituals, etc.). While teaching rules for dance and movement, the primary focus should be on children's joy in movement and dance.

Dance has social benefits as children share space, interact, observe each other, and explore movement together. Teachers may engage in movement and dance *with* children rather than being bystanders or judges.

Accommodations in Dance and Movement for Children with Disabilities
Movement activities should offer *all* children opportunities to participate, practice, and be successful. Virtually every child will be able to respond in some manner.

- Children with developmental delays may have low muscle tone and strength, and may simply require encouragement to start developing the confidence to participate in physical activities.
- Children with physical disabilities (e.g., in a wheelchair or with orthopedic braces) may require adapted equipment or activities to participate. Some adaptations may be as simple as, when working with a balance beam, placing the beam on the ground instead of elevating it, holding the child's hand or providing other adult physical support, or beginning with a wider balancing board. For other children, props can be placed, or attached to an appropriate area of the child's body or equipment. Other children may be able to participate by blinking their eyes to the beat, or keeping the beat in some other way that is physically possible for them.
- Children with auditory impairments may respond to rhythms through vibrations (e.g., by increasing the bass, by creating a way to physically feel music such as the child touching the speaker or leaning his/her body on the piano).

Movement Elements and Dance Skills

1.1: By the end of grade 4, students will identify and demonstrate basic locomotor and non-locomotor movements.

1.2: By the end of grade 4, students will develop strength, flexibility, balance, and neuromuscular coordination.

1.3: By the end of grade 4, students will identify and demonstrate accuracy in moving to a musical beat and responding to changes in tempo.

- *Children can compare moving the body from one point in space to another (e.g., hopping, creeping, skipping) with moving in place while standing, sitting, kneeling, or lying (e.g., twisting, reaching, swaying).*

- *Children can play games that involve movement (e.g., "Simon Says," "Hokey Pokey") or move freely to recordings.*
- *Children can build upper body strength by using push/pull or climbing equipment.*
- *Children can increase flexibility by holding the body in curved, straight, twisted shapes.*
- *Children can respond to rhythmic tempos (e.g., read aloud* We're Going on a Bear Hunt *by Michael Rosen) by adding motions and responding to pacing and tempo changes.*

Connections: Movement is also addressed in Physical Health standards 2.1 and 2.2 of Comprehensive Health (chapter 6).

1.6: By the end of grade 4, students will demonstrate partner skills of copying, leading, following, and mirror imaging.

- *Children can work with a partner to practice copying and leading simple movements (e.g., playing "copycat," mirroring another person).*
- *They can cooperate with a partner to move in various ways-- be an animal together or a two headed creature; find ways to move together; in slow motion; backwards or sideways; and make the biggest shape/smallest shape they can.*

Connections: The concept of mirroring is also addressed in Music standard 4.1 below.

Choreography

2.1: By the end of grade 4, students will explore and invent movement, and improvise to solve movement problems.

2.2: By the end of grade 4, students will create a dance phrase with a beginning, middle, and end; be able to repeat it, with or without music.

2.3: By the end of grade 4, students will create a dance phrase and then vary it, making changes in space, time, and energy/force.

- *Children can select a character from a story and express the character through improvised movement, considering how the character feels and how he/she would walk, run, jump, hop, stomp, stand, or sit.*
- *Children can move freely to different sorts of music selections, then set movements (e.g., marching to march music, then adding clapping during one part of the piece, then adding a section of jumping).*

Connections: The concepts of beginning, middle, and end are also addressed in Reading and Literature standard K.R.8.4 of English Language Arts (chapter 2).

Dance as Expression

3.1: By the end of grade 4 students will observe, explore, and discuss how movements can show feelings, images, thoughts, colors, sounds, and textures.

- *Children can talk about the characteristics of body posture and movement that demonstrate emotion (e.g., drooping shoulders, shivering with fear, jumping for joy), then use movement or pantomime to illustrate an emotion for other children to guess.*

- *Children can listen to different kinds of music (e.g.,* Hall of the Mountain King *by Grieg,* Rhapsody in Blue *by Gershwin)and move in ways that match the mood, then discuss what kinds of ideas the music brings to mind; read the story that inspired or accompanies the music (e.g.,* Swan Lake*).*

Performance in Dance

4.2: By the end of grade 4 students will create original dances or themes for movement improvisations, or learn traditional dances; rehearse, and demonstrate dances, making decisions about the performance space, audience location, entrances and exits, and costumes.

4.3: By the end of grade 4, students will demonstrate the ability to work effectively with a group or leader.

- *Children can use movement to warm up or ease transitions (e.g., to "get the wiggles out" before a quiet activity, to move to the playground like an animal, stretch before practicing a dance technique).*
- *Children can move creatively to make shadows on a screen (wood frame with thin white material stretched over it) or move to express reactions to music (e.g., "The Circle of Life" from* The Lion King *by Elton John and Tim Rice, Tchaikovsky's* Nutcracker Suite*).*
- *Children can learn simple folk dances to perform together, working on getting their steps synchronized, or learn to follow behind the teacher to imitate steps to a dance.*

Critical Response

5.1: By the end of grade 4, students will observe dances from a variety of cultures and describe their movements.

5.4: By the end of grade 4, students will describe and demonstrate audience skills of observing attentively and responding appropriately in classroom, rehearsal, and performance settings.

- *Kindergarten children observe live or recorded dances from a variety of cultures, and make a list of the movements used.*
- *The class can invite families and community members for dance performance, discuss the importance of the role of the audience, develop criteria for audience skills and apply to circle time or other group experiences.*
- *They can attend a school performance by older children or a professional dance performance and talk about how the dancers moved and how the audience behaved and showed its appreciation.*

Music

Children need opportunities to make music spontaneously and informally, in addition to scheduled "music times." Teachers should work collaboratively with the music specialist in the classroom and integrate music into class activities on a daily basis. Regardless of their personal abilities, teachers should be active participants in music activities.

Singing

1.1: By the end of grade 4, students will sing independently, maintaining accurate intonation, steady tempo, rhythmic accuracy, appropriately produced sound (timbre), clear diction, and correct posture.

Kindergarten children will sing alone and reproduce tones and tempos understandably.

- *Children can sing daily, as a class with the classroom teacher and music specialist, in small groups, and independently.*
- *Teachers can reinforce the concept that song lyrics contain rhymes by reading aloud stories or books whose text can also be sung (e.g., "Shoo Fly," "How Much is that Doggie in the Window?" "I'm a Little Teapot," "Mary Had a Little Lamb," all by Iza Trapani or traditional;* There Was an Old Lady Who Swallowed a Fly *by Simms Taback).*

Tips for Teachers: Children who are reluctant or unable to sing alone should be supported and encouraged, but not forced.

1.2: By the end of grade 4, students will sing expressively with appropriate dynamics, phrasing, and interpretation.

- *Children can sing songs with contrasting dynamics (e.g., loud and soft), moods, styles (e.g., lullabies, marches, happy and sad songs), or sing the same song, changing volume.*
- *Children can create finger plays for songs (e.g., "Five Green and Speckled Frogs," "My Hat, It Has Three Corners").*
- *Children can sing songs that have dominant rhythm patterns (e.g., "Row, Row, Row, Your Boat;" "Zum Gali Gali;" "Frère Jacques").*

1.3: By the end of grade 4, students will sing from memory a variety of songs representing genres and styles from diverse cultures and historical periods.

- *Children can play traditional singing games or playground games that involve chanting or singing.*
- *Children can memorize chants, rhymes, lullabies, and songs that represent different genres, cultures, and historical periods.*
- *Children who know songs in languages other than English can teach them to the class.*

Reading and Notation

2.1: By the end of grade 4, students will demonstrate and respond to: the beat, division of the beat, meter (2/4, 3/4, 4/4), and rhythmic notation, including half, quarter, eighth, and sixteenth notes and rests.

- *Children can learn that musical notation is a form of writing and communication.*
- *Children can tap or clap the syllables of their names in rhythmic pattern of whole, half, quarter, and/or eighth notes.*

- *Children can learn symbols for different notes and/or tempos by using specially marked tools (e.g., color-coded xylophones, picture cards).*

Playing Instruments

3.1: By the end of grade 4, students will play independently with accurate intonation, steady tempo, rhythmic accuracy, appropriate technique, and correct posture.

Kindergarten children will keep a steady tempo/rhythm and imitate sound patterns with instruments.

- *Children can play traditional and non-traditional percussion instruments (e.g., bells, wood blocks, sand blocks, rhythm sticks, rain sticks, maracas, pans and kitchen utensils) to accompany music with rhythmic beats and tempos (e.g., "March of the Toys" from Victor Herbert's* Babes in Toyland*, chants, world or rap music).*

3.2: By the end of grade 4, students will play expressively with appropriate dynamics, phrasing and articulation, and interpretation.

Kindergarten children will respond appropriately to start/stop cues and will control the sounds/dynamics of classroom instruments.

- *Children can create a musical beat with rhythm or melody instruments that match movements or sounds found in nature or in manmade objects (e.g., frog jumping, crickets chirping, clock ticking).*
- *Children can create musical sounds or patterns that illustrate ideas, feelings, imagery, or fantasy in response to teachers' prompts (e.g., "What would twinkling stars sound like?" "Make your instrument sound sad.").*

3.4: By the end of grade 4, students will echo and perform easy rhythmic, melodic, and chordal patterns accurately and independently on rhythmic, melodic, and harmonic classroom instruments.

- *Children can play simple instruments to respond to music from different cultures (e.g., Chinese, Hawaiian, Arabic, traditional Mexican music; a polka).*
- *Children can keep time with rhythm instruments (e.g., castanets, tambourine, drum), or repeat a musical pattern on melodic instruments (e.g., tone bar, xylophone, hand bell) or harmony instruments (e.g., guitar, electronic keyboard, autoharp).*

Improvisation and Composition

4.1: By the end of grade 4, students will improvise "answers" in the same style to given rhythmic and melodic phrases.

4.2: By the end of grade 4, students will improvise and compose simple rhythmic and melodic ostinato accompaniments.

Kindergarten children will create and demonstrate simple rhythmic and melodic patterns.

- *Children can tape record their own simple rhythmic patterns and repeat them as with the tape as it is played back.*
- *Children can or create and repeat a sound pattern to accompany a familiar song or poem.*
- *Children can create original vocal and instrumental sounds/phrases using various sound sources (e.g., body parts, hand-made instruments).*

Connections: Pattern is also addressed in Patterns, Relations, and Algebra standard K.P.3 in Mathematics (chapter 3); in Dance standards 1.3, 1.6, 2.2, and 2.3 above, and in Visual Arts standard 2.5 below.

Critical Response

5.1: By the end of grade 4, students will perceive, describe, and respond to basic elements of music, including beat, tempo, rhythm, meter, pitch, melody, texture, dynamics, harmony, and form.

5.2: By the end of grade 4, students will listen to and describe aural examples of music of various styles, genres, cultural and historical periods, identifying expressive qualities, instrumentation, and cultural and/or geographic context.

- *Children can listen to music of various styles, genres, and cultural and historical periods, and describe what appeals to them about the music.*
- *Children can talk about various times and places in which they hear music (e.g., weddings, holidays, at home when parents or siblings are playing or practicing music), and identify times when there must be silence.*

5.6: By the end of grade 4, students will describe and demonstrate audience skills of listening attentively and responding appropriately in classroom, rehearsal, and performance settings.

- *Children can talk about songs, instrumental music, or performances they like and give reasons for their opinions.*
- *They listen to music from various cultures and genres (e.g., folk music, classical, jazz, rock, American Indian, Hawaiian, Latin, African music) and historical periods (e.g., "London Bridge", music played on period instruments), particularly music from the cultures of the children in the class.*

Theater

Theatre is a natural vehicle for integration with language and literacy as children listen to and read stories from various genres, describe and recreate the characters, act out dialogue and sequences of events, and study the settings in order to create scenery and props. Dramatic play and theater are especially important in early childhood and give children mechanisms for representing, connecting, and integrating many kinds of learning and experiences. Favorite stories, books, songs, or the events of a class trip are all sources for elaboration and dramatization.

Dramatic play is just a step from formal theater. The kindergarten classroom's dramatic play area might be reorganized and renamed (e.g., "performance area," "green room") to extend use of the space and increase possibilities for dramatization.

Acting

1.1: By the end of grade 4, students will read, listen to, and tell stories from a variety of cultures, genres, and styles.

- *Children can retell and act out traditional fairy tales, folk tales, and stories they have read or heard.*
- *Children can compare and act out different versions of the same story (e.g., the fairy tale of* Goldilocks and the Three Bears *compared with* Somebody and the Three Blairs *by M. Tolhurst), or similar stories from different cultures (e.g., the flood in* Gilgamesh the King *by Ludmila Zeman, the story of Noah from the Bible, and other cultures around the world).*

Connections: The concept of genre is also addressed in Reading and Literature standard K.R.10.1, and the concepts of fairy tales and folk tales are addressed in Reading and Literature standard K.R.16.1, both of English Language Arts (chapter 2).

1.3: By the end of grade 4, students will pretend to be someone else, creating a character based on stories or through improvisation, using properties (props), costumes, and imagery.

1.4: By the end of grade 4, students will create characters through physical movement, gesture, sound and/or speech, and facial expression.

- *Children can act out characters from familiar stories doing activities from everyday life (e.g., doing chores, cooking, going to the grocery store), or pantomime (body movements, facial expressions, and gestures) their own story.*
- *Children can read/listen to books with strong emotions, and use a mirror or work in pairs to try out facial expressions and body movements that demonstrate the emotions (e.g.,* Alexander and the Terrible, Horrible, No Good, Very Bad Day *by Judith Viorst).*

1.6: By the end of grade 4, students will demonstrate the ability to work effectively alone and cooperatively with a partner or in an ensemble.

Kindergarten children will work independently and cooperatively with others in role-playing.

- *Children can cooperate with their peers to negotiate who will play which role in dramatic play.*
- *Children can work in small groups to dramatize a familiar story.*

Reading and Writing Scripts

2.1: By the end of grade 4 students will identify what drama is and how it happens.

2.2: By the end of grade 4, students will read plays and stories and identify characters, setting, and action.

Kindergarten children will understand that drama tells a story through action and dialogue, and will identify the components of the story.

- *Children can see an appropriate dramatic performance or puppet show, discuss the characters, the setting, what happened, and how different parts of the story made them feel.*

2.4: By the end of grade 4, students will create a scene or play with a beginning, middle, and end based on an original idea, a story, or other forms of literature (fiction, nonfiction, poetry).

- *Children can create a short scene or play with a beginning, middle, and end, based on an original idea or a story they have heard or read, using flannel boards, story boards, or 3-D figures to plan the play.*
- *Children can use flannel boards or model figures to recreate story sequences.*

Connections: The concept of narrative story structure is addressed in Reading and Literature standard K.R.8.4 in English Language Arts (chapter 2).

Directing

3.1: By the end of grade 4, students will, in creating informal classroom dramatizations, experiment with and make decisions about the visual configuration of the acting space (e.g., actor's exits, entrances, placement of set pieces, and the location of the audience).

Kindergarten children will create informal and somewhat more formal dramatizations, including considerations of space, setting, and action.

- *Children can listen to a story , identify the setting, mark classroom spaces to distinguish acting space from audience space, and act out the story, first discussing entrances, exits, and placement, with some children being actors and others being the audience.*
- *They can use an open area in the classroom to create a safe, fun, and flexible space for an informal classroom play.*

Technical Theatre

4.1: By the end of grade 4, students will collect, make, or borrow materials that could be used for scenery, properties (props), costumes, sound effects, and lighting for informal classroom presentations.

- *When planning an informal dramatization, children can describe what their scene should look like, plan how they will create the scene, identify props that will be needed, and decide how (and whether) to make sets, or to include sound effects or music.*
- *They can construct simple scenery for an informal classroom play (e.g. painting a large box, covering a bulletin board with paper/drawings for a backdrop).*

Critical Response

5.1: By the end of grade 4, students will describe and demonstrate audience skills of observing attentively and responding appropriately in classroom presentations, rehearsals, and live performance settings.

5.2: By the end of grade 4, students will identify and describe the visual, aural, oral, and kinetic details of classroom dramatizations and dramatic performances.

- *Children can discuss a play they have seen and give some descriptions of details or scenes they particularly liked, including visuals, sound, and/or actions.*
- *They can draw or paint impressions of performances they see, or respond to them in music or movement.*

Visual Arts

Creating visual art is an ancient, and probably universal, practice. Young children start illustrating and decorating as toddlers, and are usually eager to work on and study art throughout their school years, if not through adulthood. With skilled guidance, making and studying art can help children cultivate not only art techniques and creative expression, but also thinking skills such as questioning, observing and describing, comparing and connecting, and exploring complexity.[4]

Methods, Materials, and Techniques

1.1: By the end of grade 4, students will use a variety of materials and media, for example, crayons, chalk, paint, clay, various kinds of papers, textiles, and yarns, and understand how to use them to produce different visual effects.

- *Children can investigate how various media, surfaces, tools, and techniques can be used to produce different visual effects (e.g., painting or printing with pine branches, the tips of twigs, corks, brushes, or sponges of various shapes and sizes; rolling, flattening, or stamping impressions of objects into modeling materials such as clay).*
- *They can experiment with a single material/medium on multiple surfaces, try many materials on the same surface to discover the different ways materials can be used to produce a variety of effects, the advantages or disadvantages of each for specific purposes, and revisit materials to build on past experiences.*

1.2: By the end of grade 4, students will create artwork in a variety of two-dimensional (2D) and three-dimensional (3D) media, for example: 2D—drawing, painting, collage, printmaking, weaving; 3D—plastic (malleable) materials such as clay and paper, wood, or found objects for assemblage and construction.

- *Children can create two-dimensional works using various materials (e.g., colored pencils, crayons, tempera paint, pastels, string or fibers, textiles, papers), separately and together.*
- *When creating three-dimensional works, children can use clay or construct assemblages using various materials (e.g., cardboard, small boxes, found objects, pipe cleaners,*

buttons, shells, recycled materials, plastic straws), experimenting with ways to hold these materials together (e.g., glue, staples, string).

Tips for Teachers: Teachers can introduce the paper collages of Henri Matisse and compare with the illustrations in the books of Eric Carle; look at different kinds of prints (e.g., lithographs, woodcuts, rubber-stamps, silk-screened T-shirts); compare paintings and photographs (portraits, landscapes); look at sculptures in different media (e.g., marble, bronze, wood, found objects).

1.3: By the end of grade 4, students will learn and use appropriate vocabulary related to methods, materials, and techniques.

1.4: By the end of grade 4, students will learn to take care of materials and tools and to use them safely.

Kindergarten children will discuss, use, and care for art materials responsibly, carefully, and safely for the purpose intended.

- *Children can discuss safety before using art materials and tools, especially scissors and other sharp objects, and learn proper routines in using and caring for materials and tools.*
- *They can create picture dictionaries, defining various terms to help them using correct terminology for materials, tools, and techniques.*

Connections: The concept of caring for tools and using them safely is also addressed in Technology/Engineering standard 1.3 in Science and Technology/Engineering (chapter 4).

Elements and Principles of Design

2.1: For color, by the end of grade 4, students will explore and experiment with the use of color in dry and wet media; and will identify primary and secondary colors and gradations of black, white, and gray in the environment and artwork. They will explore how color can convey mood and emotion.

Kindergarten children will identify some primary and secondary colors, and use them in various ways.

- *Children can create a collage or book of colors, read books about colors, explore one color at a time in wet and dry media, combine primary colors, compare complementary colors, and experiment with adding black or white to colors.*
- *Children can overlay transparent or translucent papers and describe their* observations.

2.2: For line, by the end of grade 4, students will explore the use of line in 2D and 3D works, and will identify a wide variety of types of lines in the environment and in artwork.

Kindergarten children will identify a few types of lines and symbols in two and three dimensions.

- *Children can identify straight, curved, jagged, thick, and thin lines in books, nature, and other locations, then explore ways to use or combine these to create shapes, letters, drawings.*
- *Children can find examples of different kinds of lines in the environment, architecture, or in works of artists such as Piet Mondrian or Henri Matisse*.

2.3: For texture, by the end of grade 4, students will explore the use of textures in 2D and 3D works, and will identify a wide variety of types of textures in the environment and in artwork. They will create representations of textures in drawings, paintings, rubbings, or relief.

- *Children can identify and describe samples of various textures without looking (e.g., by touching samples in a mystery bag) or discuss objects with distinctive textures.*
- *Children can make crayon rubbings and later match their rubbing to the original texture.*
- *Children can listen to/ look at books with highly textured illustrations (e.g.,* The Rainbow Fish *by Marcus Pfister), then use textured materials (e.g., foil, sandpaper, corduroy) to create pictures and/or books.*

2.4: For shape and form, by the end of grade 4, students will explore the use of shapes and forms in 2D and 3D works. They will identify shapes of different sizes and forms in the environment and in artwork.

- *Children can examine and describe art works with geometric and organic shapes and forms (circle, rectangle, diamond, oval, pear, or star) and/or find shapes in the paintings of Paul Klee and the mobiles of Alexander Calder, then make a collage or assemblage using shapes of their choice.*
- *Children can read/listen to books about geometric and organic shapes (e.g.,* The Shape Game *by Anthony Browne,* Draw Me a Star *by Eric Carle).*

Connections: The concepts of shape and form are also addressed in Geometry standards K.G.1, K.G.2, and K.G.3 of Mathematics (chapter 3).

2.5: For pattern and symmetry, by the end of grade 4, students will explore the use of patterns and symmetrical shapes in 2D and 3D works. They will identify patterns and symmetrical forms and shapes in the environment and in artwork, and will explain and demonstrate ways in which patterns and symmetrical shapes may be made.

- *Children can look for patterns in windowpanes, tiles, or fabrics.*
- *Children can create repeating patterns with stamps or sponges, or string beads in repeating patterns of color and shapes.*

Connections: The concept of pattern is also addressed in Patterns, Relations, and Algebra standard K.P.3 of Mathematics (chapter 3).

2.6: For space and composition, by the end of grade 4, students will explore composition by creating artwork with a center of interest, repetition, and/or balance. They will demonstrate an understanding of foreground, middle ground, and background, and will define and identify occurrences of balance, rhythm, repetition, variety, and emphasis.

Kindergarten children will illustrate beginning concepts of space and composition in art works.

- *Children can identify the center of interest and examples of repetition in paintings such as "The Bathers" by Georges Seurat or "Landscape with Houses at Ceret" by Juan Gris.*
- *When drawing or painting, children can work in specific areas of the paper, such as the middle, corners, edges/borders.*
- *Children can ask and answer questions such as "What is the center of interest, or subject of this painting?" "How has the space been used?," "What kind of shape is around the subject/center of interest (i.e., negative space)?"*

Observation, Abstraction, Invention, and Expression

3.1: By the end of grade 4, students will create 2D and 3D artwork from direct observation.

3.2: By the end of grade 4, students will create 2D and 3D expressive artwork that explores abstraction.

- *Children can create artwork from observation (e.g., observation of toys, leaves, animals), with the goal of seeing and representing what they actually observe rather than representing what they think/imagine they see.*
- *Children can compare realistic (e.g., Raphael, Delacroix, Manet) with more abstract works (e.g., Picasso, Paul Klee, Jackson Pollack), and try creating their own realistic and abstract works.*

Tips for Teachers: *Discovering Great Artists: Hands-On Art for Children in the Styles of the Great Masters* by Mary Ann Kohl can be used as inspiration for children to create art.

3.3: By the end of grade 4, students will create 2D and 3D artwork from memory or imagination to tell a story or embody an idea or fantasy.

Kindergarten children will create artwork from memory or imagination to tell a story.

- *Children can listen to/read books about artists, then discuss the process of making and appreciating art, and make paintings of artists at work.*
- *Children can create a puppet or clay model of a character from a story or from their own lives.*
- *After listening to and viewing the book,* Low Song *by Eve Merriam, or hearing a piece of music, children use their imagination or visualization as inspiration for their own artwork.*

Drafting, Revising, and Exhibiting

4.1: By the end of grade 4, students will select a work or works created during the year and discuss them with a parent, classmate, or teacher, explaining how the work was made, and why it was chosen for discussion.

4.2: By the end of grade 4, students will select works for exhibition and work as a group to create a display.

- *Children can choose personal art works to be used for display at home, in school, or in the community, accompanied by dictated labels or descriptions.*
- *Children can create a portable exhibition in the form of a big book of drawings and paintings that can be checked out and taken home.*

Critical Response

5.1: By the end of grade 4, in the course of making and viewing art, students will learn ways of discussing it, such as by making a list of all of the images seen in an artwork (visual inventory); and identifying kinds of color, line, texture, shapes, and forms in the work.

- *Children can select a piece of their own art work and tell why they like it, why they chose that subject, or how they made it.*
- *With guidance, children can search art books or online museum sites to pursue more information about questions generated by reviewing a particular work of art.*
- *Children can look at and compare illustrations in books illustrated by different illustrators (e.g., Jan Brett, Chris Van Allsburg, Eric Carle), and learn some of the vocabulary of art, such as line, color, and texture.*

Arts Connections

Purposes and Meanings in the Arts

6.2: By the end of grade 4, students will investigate uses and meanings of examples of the arts in children's daily lives, homes, and communities.

Kindergarten adaptation: see 7.1 below

Roles of Artists in Communities

7.1: By the end of grade 4, students will investigate how artists create their work; read about, view films about, or interview artists such as choreographers, dancers, composers, singers, instrumentalists, actors, storytellers, playwrights, illustrators, painters, sculptors, craftspeople, or architects.

Kindergarten children will demonstrate their awareness of the arts in their daily lives and will be exposed to how professional art is created.

- *Children can visit or see photographs of different styles of architecture, sculptures in local parks and museums; then discuss what they have visited or seen.*

- *Children can identify various kinds of arts and crafts they have seen (sculpture; paintings; photographs; quilts, pottery, antique or handmade furniture).*
- *Children can meet performing or visual artists and interview them about the training needed to make a career in the arts and other aspects of their work, such as inspiration and technique.*

Concepts of Style, Stylistic Influence, and Stylistic Change

8.1: By the end of grade 4, students will identify characteristic features of the performing and visual arts of native populations and immigrant groups to America (e.g., styles of native North American cultures of the Plains or Southwest; folk and fine arts of immigrant groups from European, African, Latin American, Asian, and Middle Eastern countries.

- *Children can explore arts and artifacts of modern America and other cultures and eras, then compare the sounds, rhythms, or appearances that might help them identify the sound or sight of two styles, eras, artists, etc.*
- *Children can invite parents and community members of different cultures to bring or lend examples of their culture's artwork to the class, or to demonstrate their performances or traditions.*

Tips for Teachers:
1. Provide religious context or other contextual information when applicable, particularly when children create their own versions of artifacts from other cultures.
2. Many museum websites, Smithsonian Folkways music, Library of Congress, etc., provide resources online for free or at low cost.

Inventions, Technologies, and the Arts

9.1: When using art materials or handling and viewing artifacts or musical instruments, by the end of grade 4, students will ask and answer questions such as "What is this made of?," "How does this instrument produce sound?," "Would I design this differently?," "Who first thought of making something like this?"

- *Children can see, touch and ask questions about how art materials (e.g., crayons) or instruments (e.g., drums) are made and used; then select one technique or material to investigate and experiment with (e.g., make paper, build a drum, create a collage); then contribute to a class project or display using their knowledge or creation.*

Interdisciplinary Connections

10.1: By the end of grade 4, students will integrate knowledge of dance, music, theatre, and visual arts and apply the arts to learning other disciplines.

- *Children can listen to/read books that explore music, dance, theater, visual arts, and literacy (such as* We Are All Alike; We Are All Different *by Cheltenham Elementary School Kindergarteners and photographer Laura Dwight) and represent ways that people are alike and ways they are unique.*
- *Children can explore mathematics through dance, music, and visual arts (pattern, rhythm).*

- *Children can explore science through visual arts (drawing from nature, collages using natural materials), through dance (body movement and use), and through music (sound).*
- *Children can explore social studies/history through folk dances, architecture, and dramatization.*
- *Children can explore literacy through drama, dance, music, and visual arts to expand on sounds, patterns, and themes.*
- *Children can explore the arts through literature about the arts and artists.*

Appendix A: Reading References

Readings suggested by specific learning activities are referenced *in order of their appearance* in the document, *not* alphabetically by author.

Additional references are provided for certain standards, and are listed alphabetically by author's last name, following suggested readings for the standard.

ENGLISH LANGUAGE ARTS

Language

Standard K.L.2.1

Riley, Linnea Asplind. *Mouse Mess*. New York: Blue Sky Press/Scholastic, 1997.

Standard K.L.5.4

Christelow, Eileen. *Five Little Monkeys Jumping on the Bed*. Boston: Houghton Mifflin Company, 1998.

Reading and Literature

Standard K.R.7.1

Brown, Marc. *Arthur* series. New York: Random House.

Examples of Step-Into-Reading, Step 3 Series: *Arthur's Reading Race* (1996), *Arthur, Clean Your Room!* (1998), *Arthur in a Pickle* (1999), *Arthur's Fire Drill* (2000)

Standard K.R.7.2

Engelbreit, Mary. *Mary Engelbreit's Mother Goose Book and CD.* New York: HarperCollins, 2008.

Lear, Edward. *The Complete Nonsense of Edward Lear.* London: Faber Children's Books, 2001.

Seuss, Dr. *There's a Wocket in My Pocket!* (Dr. Seuss's Book of Ridiculous Rhymes) New York: Random House Children's Books, 1996.

Standard K.R.7.3

Obligado, Lilian. *Faint Frogs Feeling Feverish and Other Terrifically Tantalizing Tongue Twisters*. New York: Penguin Group (USA) Incorporated, 1983.

Shaw, Nancy E. *Sheep on a Ship*. Illustrated by Margot Apple. Boston: Houghton Mifflin, 1992.

———. *Sheep in a Shop*. Illustrated by Margot Apple. Boston: Houghton Mifflin, 1988.

Patz, Nancy. *Moses Supposes His Toeses are Roses and 7 Other Silly Old Rhymes*. San Diego, CA: Harcourt Brace, 2003.

Hawkins, Colin. *Tog the Dog*. Illustrated by Jacqui Hawkins New York: Penguin Group, 1991.

Standard K.R.8.1

Parkes, Brenda, and Judith Smith. *The Enormous Watermelon*. Illustrated by Mary Davy. Melbourne: Mimosa Publications, 1997.

Kalan, Robert. *Jump Frog Jump*. Illustrated by Byron Barton. New York: HarperCollins, 2003.

Standard K.R.9.1

Potter, Beatrix. *The Complete Tales of Beatrix Potter*. New York: Warne (an imprint of Penguin Group USA), 2002.

Seuss, Dr., and Molly Leach. *Your Favorite Seuss: A Baker's Dozen by the One and Only Dr. Seuss*. New York: Random House, 2004.

Brown, Marc. *Arthur* series. New York: Random House.

Brett, Jan. *Jan Brett's Little Library*. New York: Putnam Juvenile, 2003.

Standard K.R.9.2

Carle, Eric. *Eric Carle's Treasury of Classic Stories for Children*. New York: Orchard Books, 1996.

Steig, William. *A Handful of Beans: Six Fairy Tales Retold by Jeanne Steig with Illustrations by Wiliam Steig*. New York: Joanna Cotler, 1998.

Spier, Peter. *London Bridge Is Falling Down*. New York: Yearling, 1992.

Van Allsburg, Chris. *The Polar Express Twentieth Anniversary Edition*. Boston: Houghton Mifflin, 2005.

Brett, Jan. *Comet's Nine Lives*. Putnam Juvenile, 2003.

Standard K.R.10.1

Santore, Charles. *Aesop's Fables*. New York: Random House, 1997.

Burgess, Thornton. *Old Mother West Wind and 6 Other Stories*. New York: Dover Press, 1996. Thornton Burgess (1874–1965) also wrote many other stories and books about animals.

Kipling, J. Rudyard. *The Jungle Book*. This book, originally published 1894, is available in many editions from many publishers.

Standard K.R.14.1

Galdone, Paul. *The Three Little Pigs*. Also available in CD. Boston: Clarion Books, 2006.

Parkes, Brenda. *The Gingerbread Man*. Literacy Links Plus Big Books. Melbourne, Australia: Mimosa Publications, 2001.

Winter, Jeanette. *The House that Jack Built*. New York: Penguin Putnam, 2003.

Galdone, Paul. *Henny Penny*. Boston: Houghton Mifflin Company, 1984.

Nicklaus, Carol. *Rock-A-bye Babies.* New York: Random House, 1994.

Kubler, Annie. *Ring Around the Rosie*. Swindon, UK: Child's Play International Ltd., 2003.

Standard K.R.15.1

Friend, Catherine. *My Head is Full of Colors*. New York: Hyperion, 1994.

Standard K.R.16.2

Aardema,Verna. *Bringing the Rain to Kapiti Plain*. Illustrated by Beatriz Vidal. New York: Penguin Putnam Books, 1993.

Nelson, S. D. *Gift Horse: A Lakota Story*. New York: Harry N. Abrams, 1999.

MATHEMATICS

Number Sense and Operations

Standard K.N.1

Thompson, Kim Mitzo, and Karen Mitzo Hilderbrand. *Six Little Ducks* Illustrated by Dorothy Stott. Grand Rapids, MI: School Specialty Publishing, 2006.

DeFelice, Cynthia C. *One Potato, Two Potato*. Illustrated by Andrea U'Ren. New York: Farrar Straus Giroux, 2006.

Standard K.N.3

Galdone, Paul. *The Three Bears*. Boston: Clarion Books, 2001. Also available as a cassette.

———. *The Three Little Pigs*. Boston: Clarion Books, 2006. Also available as a CD.

———. *Henny Penny*. Boston: Houghton Mifflin Company, 1984.

Standard K.N.4

Murphy, Stuart J. *Just Enough Carrots*. Illustrated by Frank Remkiewicz. New York: HarperTrophy, 1997.

Aker, Suzanne. *What Comes in 2's, 3's, & 4's?* Illustrated by Bernie Karlin. London: Aladdin, 1992.

Murphy, Stuart J. *A Pair of Socks*. Illustrated by Lois Ehlert. New York: HarperTrophy, 1996.

Standard K.N.5

McMillan, Bruce. *Eating Fractions*. New York: Scholastic, 1991.

Giganti, Paul. *Each Orange Had Eight Slices*. Illustrated by Donald Crews. New York: HarperTrophy, 1999.

Wood, Don and Audrey Wood. *The Little Mouse, the Red Ripe Strawberry, and the Big Hungry Bear*. Illustrated by Don Wood. Swindon, UK: Child's Play International Ltd., 1984.

Standard K.N.8

Allen, Pamela. *Who Sank the Boat?* New York: Putnam Juvenile, 1996.

Carter, David A. *How Many Bugs in a Box? A Pop-up Counting Book.* New York: Little Simon, 1988.

Tompert, Ann. *Just a Little Bit*. Illustrated by Lynn M. Munsinger. Boston: Houghton Mifflin/Walter Lorraine Books, 1996.

Hamm, Diane Johnston. *How Many Feet in the Bed?* London: Aladdin, 1994.

Schwartz, David M. *How Much is a Million?* Illustrated by Steven Kellogg. New York: HarperTrophy, 1993.

Patterns, Relations, and Algebra

Standard K.P.2

Pluckrose, Henry. *Sorting*. New York: Children's Press (part of Scholastic Library Publishing),1995.

Reid, Margarette S. *The Button Box*. Illustrated by Sarah Chamberlain. New York: Puffin, 1995.

Aber, Linda Williams. *Grandma's Button Box*. Illustrated by Page Eastburn O'Rourke. New York: Kane Press, 2002.

Standard K.P.3

Pluckrose, Henry. *Pattern*. New York: Children's Press, 1995.

Standard K.P.4

Friedman, Aileen. *The King's Commissioners*. Illustrated by Susan Guevara. New York: Scholastic, 1994.

Geometry

Standard K.G.1

Hoban, Tana. *So Many Circles, So Many Squares*. New York: Greenwillow, 1998.

———. *Shapes, Shapes, Shapes*. New York: HarperTrophy, 1996.

———. *Circles, Triangles and Squares*. New York: Simon and Schuster, 1974.

Scott, Janine. *The Shape of Things*. Minneapolis: Compass Point Books, 2006.

Burns, Marilyn. *The Greedy Triangle*. Illustrated by Gordon Silveria. New York: Scholastic, 1995.

Silverstein, Shel. *The Missing Piece*. New York: HarperCollins, 1976.

Measurement

Standard K.M.1

Slobodkina, Esphyr. *Caps for Sale: A Tale of a Peddler, Some Monkeys and Their Monkey Business.* New York: HarperTrophy, 1987.

Pluckrose, Henry. *Length*. New York: Children's Press, 1995.

SCIENCE AND TECHNOLOGY/ENGINEERING

Earth and Space Science

Standard 5

Silver, Donald M. *One Small Square: The Night Sky*. New York: McGraw-Hill, 1998.

Asch, Frank. *Happy Birthday, Moon*. London: Aladdin, 2000.

Carle, Eric. *Papa, Please Get the Moon for Me*. New York: Simon and Schuster, 1991.

Life Science (Biology)

Standard 5

Ewart, Claire. *Fossil*. New York: Walker Books for Young Readers, 2004.

Aliki. *Fossils Tell of Long Ag*o. New York: HarperTrophy, 1990.

Standard 6

Faulkner, Keith. *The Five Senses*. Illustrated by Jonathan Lambert. New York: Cartwheel, 2002.

Showers, Paul. *The Listening Walk*. Illustrated by Aliki. New York: HarperTrophy, 1993.

Pfeffer, Wendy. *Sounds All Around*. Illustrated by Holly Keller. New York: HarperTrophy, 1999.

Wells, Rosemary. *Night Sounds, Morning Colors*. Illustrated by David M. McPhail. New York: Dial Books, 1994.

Standard 7

Boyle, Doe. *Summer Coat, Winter Coat: The Story of a Snowshoe Hare.* Illustrated by Allen Davis. Norwalk, CT: Soundprints, 1993.

Standard 8

Ward, Lorraine. *Wildlife Refuge: A Classroom Adventure*. Illustrated by Laura Jacques. Watertown, MA: Charlesbridge Publishing, 1997.

Hare, Tony. *Animal Habitats: Discovering How Animals Live in the Wild*. New York: Facts on File, 2001.

Technology/Engineering

Standard 1.2

Galdone, Paul. *The Three Little Pigs*. Boston: Clarion Books, 2006. Also available as a CD.

HISTORY AND SOCIAL SCIENCE

Concepts and Skills

History and Geography

Concept and Skill K.2

Martin Jr., Bill, and John Archambault. *Knots on a Counting Rope*. Illustrated by Ted Rand. New York: Scholastic, 1987.

Little, Lessie Jones and Eloise Greenfield. *Children of Long Ago: Poems*. Illustrated by Jan Spivey Gilchrist. New York: Lee and Low Books, 2000.

Polacco, Patricia. *The Keeping Quilt*. London: Aladdin, 2001.

Concept and Skill K.5

Sweeney, Joan. *Me On The Map*. Illustrated by Annette Cable. New York: Dragonfly Books, 1998.

Nunn, Tamara. *My Global Address*. Illustrated by Lauren Klementz-Harte. Minneapolis: Sagebrush, 1996.

Civics and Government

Concept and Skill K.6

Roehe, Stephanie. *That's Not Fair*. New York: Minedition, 2004.

Carlson, Nancy. *It's Not My Fault.* Minneapolis: Carolrhoda Books, 2003.

Economics

Concept and Skill K.8

Chinn, Karen. *Sam and the Lucky Money*. Illustrated by Cornelius Van Wright and Ying-Hwa Hu. New York: Lee and Low Books, 1997.

Williams, Vera. *A Chair for My Mother*. New York: HarperTrophy, 1984.

O'Neill, Alexis. *Estela's Swap*. Illustrated by Enrique O. Sanchez. New York: Lee and Low Books, 2002.

Learning Standards

History

Standard K.H.1

Sis, Peter. *Follow the Dream: the Story of Christopher Columbus*. New York: Dragonfly Books (part of Random House), 1996.

Frost, Helen. *Independence Day*. Illustrated by Gail Saunders-Smith. Mankato, MN: Pebble Books, 2000.

Adler, David, John Wallner, and Alexandra Wallner *A Picture Book of George Washington*. New York: Holiday House, 1990.

———. *A Picture Book of Abraham Lincoln*. New York: Holiday House, 1990.

Waters, Kate. *Sarah Morton's Day: A Day in the Life of a Pilgrim Girl*. New York: Scholastic, 1993.

Additional references:

Nelson, Robin. *Independence Day*. Minneapolis: Lerner Publications, 2003.

Williams, Rozanne Lanczak. *Long Ago and Today*. Huntington Beach, CA: Creative Teaching Press, 1996.

Civics and Government

Standard K.C.G.5

Hines, Anna Grossnickle. *All by Myself*. Boston: Houghton Mifflin/Clarion, 1985.

Blegvad, Lenore. *Anna Banana and Me*. Illustrated by Erik Blegvad. London: Aladdin, 1987.

Roop, Peter. *The Buffalo Jump*. Illustrated by Bill Farnsworth. Flagstaff, AZ: Rising Moon Books, 1999.

Gackenbach, Dick. *Harry and the Terrible Whatzit*. Boston: Clarion Books, 1984.

Atkins, Jeannine. *Aani and the Tree Huggers*. Illustrated by Venantius J. Pinto. New York: Lee and Low Books, 2000.

Yolen, Jane. *Letting Swift River Go*. Illustrated by Barbara Cooney. Boston: Little, Brown Young Readers, 1995.

Seuss, Dr. *The Lorax*. New York: Random House Books for Young Readers, 1971.

Standard K.C.G.7

Bateman, Teresa. *Red, White, Blue, and Uncle Who? The Stories Behind Some of America's Patriotic Symbols*. Illustrated by John O'Brien. New York: Holiday House, 2001.

West, Delno C., and Jean M. West. *Uncle Sam & Old Glory: Symbols of America*. Illustrated by Christopher Manson. New York: Atheneum, 2000.

Economics

Standard K.E.8

Carling, Amelia Lau. *Mama and Papa Have a Store*. New York: Dial, 1998.

Crews, Donald. *Bigmama's*. New York: HarperTrophy, 1998.

COMPREHENSIVE HEALTH

Physical Health

Standard 1.1

Barner, Bob. *Dem Bones*. San Francisco: Chronicle Books LLC, 1996.

Balestrino, Philip. *The Skeleton Inside You*. Illustrated by True Kelley. New York: HarperTrophy, 1989.

Williams, Mo. *Knuffle Bunny: A Cautionary Tale*. New York: Hyperion, 2004.

Standard 1.3

Holcomb, Nan. *Smile from Andy*. Illustrated by Dot Yoder. Hollidaysburg, PA: Jason and Nordic Publishers, 1989.

Dwight, Laura. *We Can Do It!* Long Island, NY: Star Bright Books, 1998.

Bunnett, Rochelle. *Friends in the Park*. Illustrated by Carl Sahlhoff. Edina, MN: Checkerboard Press, 1993.

Standard 3.2

Dooley, Norah. *Everybody Cooks Rice*. Illustrated by Peter J. Thornton. Minneapolis: Carolrhoda Books, 1992.

———. *Everybody Bakes Bread*. Minneapolis: Carolrhoda Books, 1995.

Morris, Ann. *Bread, Bread, Bread*. Illustrated by Ken Heyman. New York: HarperCollins, 1989.

Social and Emotional Health

Standard 6.1

Polacco, Patricia. *The Keeping Quilt*. London: Aladdin, 2001.

Safety and Prevention

Standard 8.1

Berger, Melvin. *Germs Make Me Sick!* Illustrated by Marylin Hafner. New York: HarperTrophy, 1995.

Ross, Tony. *Wash Your Hands!* La Jolla, CA: Kane/Miller Book Publishers, 2000.

Romanek, Trudee, *Achoo: The Most Interesting Book You'll Ever Read About Germs*. Illustrated by Rose Cowles. Tonawanda, New York: Kids Can Press, Ltd., 2003.

Standard 8.4

Klein, Abby. *Ready Freddy! Tooth Trouble*. Illustrated by John Mckinley. New York: Scholastic Inc./Blue Sky Press, 2004.

Park, Barbara. *Junie B., First Grader: Toothless Wonder*. Illustrated by Denise Brunkus. New York: Scholastic, 2003.

Munsch, Robert. *Andrew's Loose Tooth*. Illustrated by Michael Martchenko New York: Cartwheel, 2002.

Civardi, Anne, Michelle Bates, and Stephan Cartwright. *Going to the Dentist*. Illustrated by Stephen Cartwright. PA: Usborne Books, 2005.

Keller, Laurie. *Open Wide: Tooth School Inside*. New York: Scholastic, 2001.

Personal and Community Health

Standard 12.1

Brazelton, T. Berry. *Going to the Doctor*. Boston: Addison Wesley Publishing Company, 1996.

Rogers, Fred. *Going to the Doctor*. Photograph by Jim Judkis. New York: Putnam, 1986.

McDonald, Megan. *Judy Moody, M.D.: The Doctor is In!* Illustrated by Peter H. Reynolds. Cambridge, MA: Candlewick, 2006.

THE ARTS

Dance

Standard 1.3

Rosen, Michael. *We're Going on a Bear Hunt*. Illustrated by Helen Oxenbury. London: Aladdin, 2003.

Standard 3.1

Isadora, Rachel. *Swan Lake.* New York: Putnam Juvenile, 1996.

Music

Standard 1.1

Trapani, Iza. *Shoo Fly*. Watertown, MA: Charlesbridge Publishing, 2000.

——— and Bob Merrill. *How Much is that Doggie in the Window?* Watertown, MA: Charlesbridge Publishing, 2001.

———. *I'm a Little Teapot*. Watertown, MA: Charlesbridge Publishing, 1998.

_____. *Mary Had a Little Lamb*. Watertown, MA: Charlesbridge Publishing, 2003.

Taback, Simms. *There Was an Old Lady Who Swallowed a Fly*. New York: Scholastic Books, 1999.

Standard 1.2

Burris, Priscilla. *Five Green and Speckled Frogs*. New York: Cartwheel, 2003.

Beall, Pamela Conn & Susan Hagen Nipp. "My Hat, It Has Three Corners" in *Wee Sing Silly Songs*. Book and CD edition. New York: Price Stern Sloan, 2006.

Theatre

Standard 1.1

Gorbachev, Valeri. *Goldilocks and the Three Bears*. New York: North-South, 2003.

Tolhurst, Marilyn. *Somebody and the Three Blairs*. Illustrated by Simone Abel. New York: Scholastic, 1994.

Brett, Jan. *On Noah's Ark*. New York: Penguin Putnam Books, 2003.

Zeman, Ludmila. *Gilgamesh the King*. Toronto: Tundra Books, 1998.

Standard 1.4

Viorst, Judith. *Alexander and the Terrible, Horrible, No Good, Very Bad Day*. Illustrated by Ray Cruz. London: Aladdin, 1987.

Additional reference:

Yolen, Jane. *Sleeping Ugly*. Illustrated by Diane Stanley. New York: Putnam Juvenile, 1997.

Visual Arts

Standard 2.3

Pfister, Marcus. *The Rainbow Fish*. Illustrated by J. Alison James. New York: North-South, 2000.

Browne, Anthony. *The Shape Game*. New York: Farrar, Straus and Giroux, 2003.

Carle, Eric. *Draw Me a Star*. New York: Putnam Juvenile, 1998.

Standard 3.2

Kohl, MaryAnn, and Kim Solga *Discovering Great Artists: Hands-On Art for Children in the Styles of the Great Masters*. Illustrated by Kim Solga. Bellingham, WA: Bright Ring Publishing, 1997.

Standard 3.3

Merriam, Eve, and Pam Paparone. *Low Song*. Illustrated by Pam Paparone. New York: Margaret K. McElderry (an imprint of Simon and Schuster), 2001.

Additional reference:

Van Allsburg, Chris. *Ben's Dream*. Boston: Houghton Mifflin, 1982.

Arts Connections

Standard 10.1

Cheltenham Elementary School Kindergartners. *We Are All Alike; We Are All Different*. Photographs by Laura Dwight. New York: Scholastic, 2002.

Appendix B: Acknowledgements

The Department of Elementary and Secondary Education, Elementary School Services (ESS) wishes to thank the following participants in the Kindergarten Curriculum and Teacher Leadership Project (2002–2005), whose work provided the foundation for this document. In the listings below, ELA stands for English Language Arts; FL for Foreign Language.

Project Staff and Consultants

Contributors are listed alphabetically. The specific committees or service provided by staff and consultants who worked on this project (in most cases) are listed in parentheses following each individual's name.

Department of Elementary and Secondary Education

Alice Barton, Supervisor, Elementary School Services (Editor)
Emily Caille, Education Specialist, Elementary School Services (Health)
Min-Hua Chen, Education Specialist, Elementary School Services (Project Coordinator, also Committee Leader for ELA, History, Health, FL)
Barbara Libby, Director, Mathematics, Science, and Technology/Engineering (Reviewer)
Barbara Solomon, Director, Elementary School Services (Reviewer)
Carole Thomson, Associate Commissioner for State and Federal Programs (Reviewer)
Donna Traynham, Pre-K to 16 Specialist, Elementary School Services (Reviewer)
Susan Wheltle, Director, Office of Humanities (Editor and Reviewer)

Former Early Learning Services Department, Department of Education (2002-2005)

Carolina Buitrago, Kindergarten Coordinator
Nancy Doyle, Education Specialist (Committee Co-Leader: ELA, History, FL)
Annette Lamana, Education Specialist (Committee Co-Leader: Arts)
Sandy Putnam-Franklin, Education Specialist (Writer: Mathematics, History, Arts, Health; Committee Leader: Science, Mathematics, Arts)
Elisabeth Schaefer, Administrator, Early Learning Services
Lisa Van Thiel, Education Specialist (Committee Co-Leader: Science, Mathematics)

Consultants (2002–2006)

Elena Bodrova, Research Fellow, National Institute of Early Education Research (NIEER), and Mid-Continent Research for Education and Learning (Reviewer)
Harriet Egertson, Consultant, National Center for Early Development and Learning (Reviewer)
Deborah Leong, Research Fellow, NIEER, and Professor of Psychology, Metropolitan State College, Denver, CO (Reviewer)
Carol MacNeill, Consultant, Scituate (Committee Co-Leader: Health, FL)
Mary Mindess, Professor, Lesley University, Cambridge
Ann Palches, Early Childhood Coordinator, Martha's Vineyard R.S.D. (Writer: FL)
Paula Rhodes, Consultant, Early Childhood Associates, Inc. (Project Writer: ELA and Science)
Linda Warren, Consultant, Early Childhood Associates, Inc. (Project Writer: ELA and Science)

Consultant (2008)

Gayla Song, Consultant (editing and formatting)

Project Members

Participants in the project from 2002–2006 are listed alphabetically. Titles and affiliations are from the time of their participation. Committees they worked on are shown in parentheses.

Barbara Allard, Teacher, Fall River Public Schools (ELA, Mathematics)
Karen L. Anderson, Asst. Professor of Education, Stonehill College, Easton (Mathematics, Arts)
Amy Bamforth, Mental Health Specialist, Somerville Public Schools CPC Program (Health)
Jane Beane, K-3 Teacher, Lawrence Public Schools (Science)
Barbara Black, Early Childhood Coordinator, Northampton Public Schools (ELA)
Alice Brennan, Curriculum Specialist, Shrewsbury Public Schools (Mathematics)
Ronda Brenner, Early Learning Specialist, Medford Public Schools (Science, History, Health)
Terry Caccavale, Foreign Language Teacher, Holliston Public Schools (FL)
Darrangh Callahan, Consultant, Framingham, MA (Science)
Virginia Ceruti, Kindergarten Teacher/Principal, Norwood Public Schools (Science, Mathematics, Arts)
Sandra Christison, Kindergarten Teacher, Boston Public Schools (ELA, Mathematics, Arts)
Mary Curro, Academic Coordinator for Kindergarten, Holyoke Public Schools (ELA, Mathematics, Arts)
Bonnie Dalimonte, Kindergarten Teacher, Webster Public Schools (Mathematics)
Sarah Davila, Consultant, Somerville Public Schools (ELA, History, Arts, FL)
Evelyn DeRosa, Kindergarten Teacher, Arlington Public Schools (Mathematics)
Deann Desrosiers, Health Teacher, Leicester Public Schools (Health)
Jane Dufault, Kindergarten Integrated Arts Specialist, Westport Community Schools (Arts)
May Emory, Head of Art Studio, Eric Carle Museum of Picture Book Art, Amherst (Arts)
Marcia Evans, Assistant Superintendent for Curriculum, Nantucket Public Schools (ELA)
Laura Fields, K-1 Teacher, Neighborhood House Charter School, Dorchester (ELA)
Robert Fitzpatrick, Lead Physical Education Teacher, Leicester Public Schools (Health)
Beverly Fletcher, K-1 Curriculum and K Grant Coordinator, Quabbin R.S.D. (Mathematics)
Laurie Flynn, Kindergarten Teacher, Worcester Public Schools (Science)
Margo Georgantas, Kindergarten Teacher, Chicopee Public Schools (Science, Mathematics, Health, Arts, FL)
Linda Giovannucci, Consultant, Scituate (FL)
Laura Goldstein, ELA Teacher & Elementary Spanish Coordinator, Arlington P. S. (FL)
Susan Gosselin, Kindergarten Mentor Teacher, Springfield Public Schools (ELA)
Lorraine Granda, Principal, Dartmouth Public Schools (ELA)
Shelley Gross, Early Childhood Coordinator, Medford Public Schools (Science, History, Health)
Barbara Guecia, Kindergarten Teacher, Webster Public Schools (History, Health)
Lori Harries, Kindergarten Teacher, Dracut Public Schools (Mathematics)
Susan Horn, Assistant Superintendent for Curriculum, Maynard Public Schools (ELA)
Mary Joyce, Kindergarten Special Education Teacher, Dedham P. S. (Science, Mathematics)
Mary Ellen Kirrane, Safe Drug Free Schools Coordinator, Brockton Public Schools (Health)
Edgar Klugman, Professor Emeritus, Wheelock College, Boston, and Play for Keeps (ELA, History, Health)

Hanne Kohrman, Early Childhood Program Specialist, Hampshire Education Collaborative, Northampton (ELA)
Marie LaFrance, Principal, Fall River Public Schools (ELA)
Beverly Letendre, Kindergarten Teacher, Fall River Public Schools (Mathematics)
Eleanore Grater Lewis, EDC, Newton & Consultant, Waltham (ELA, Science, History, Mathematics, Arts, Health, FL)
Leonard Lubinsky, Consultant, Former Superintendent, Erving School Union #28 (Science)
Vicki C. Milstein, Early Childhood Coordinator, Brookline Public Schools (Mathematics)
Mary Mindess, Professor of Education, Lesley University, Cambridge (ELA, History, Health)
Lynn Morse, Kindergarten Teacher, Millis Public Schools (Science, History)
Debra Murphy, Cape Cod Community College, West Barnstable (Science)
Gregory Nelson, Assoc. Professor of Education, Bridgewater State College (Mathematics, Arts)
Ann J. Palches, Early Childhood Coordinator, Martha's Vineyard Public Schools (History, Health; Project Writer: FL)
Melissa Parker, Kindergarten Teacher, Westport Public Schools (Mathematics)
Deborah C. Peck, Kindergarten Inclusion Teacher, Ashland Public Schools (Arts)
Susan Perron, Kindergarten Inclusion Teacher, Northbridge Public Schools (Arts)
Carole Poirier, K-5 Curriculum Coordinator, Norwood P. S. (Science, Mathematics, Arts)
Michelle Rapoza, Teacher Assistant, Westwood Public Schools (Arts)
Michele Regan-Ladd, Early Childhood Coordinator, Frontier R.S.D./Union #38 (ELA, History, Health)
Lucille Richards, Early Childhood Facilitator, Worcester Public Schools (Science)
Geri Robinson, Vice President, Early Childhood Program, Boston Children's Museum (Science)
Donna J. Roy, System-wide Early Childhood Lead Teacher, Lawrence P. S. (Mathematics)
James P. St. Clair, Kindergarten Teacher, Cambridge Public Schools (FL)
Lynn Santa, Kindergarten Mentor Teacher, Springfield Public Schools (ELA)
Elisabeth Scanlon, Director of Fine Arts, Norwood Public Schools (Arts)
Elizabeth Scaparotti, Kindergarten Teacher, Beverly Public Schools (ELA)
Maria Serpa, Professor, Lesley University, Cambridge (ELA)
Janice Simpson, Kindergarten Teacher/Early Childhood Coordinator, Millis Public Schools (Science, History)
Patricia Smith, Kindergarten Teacher, Northbridge Public Schools (Arts)
Catherine Alaimo Stickney, Inclusion Specialist, Ashland Public Schools (Mathematics, Arts)
Paula Sullivan, Principal, Westport Community Schools (Mathematics, Arts)
Karen Talley, Curriculum and Quality Childhood Consultant (ELA, Mathematics, Arts)
Elizabeth Koppe Thibeault, Kindergarten/Grade 1 Teacher, Shrewsbury P. S. (Mathematics)
David Thomas, Early Childhood Coordinator, Barnstable Public Schools (History, Health)
Linda Trouville, Coordinator, Curriculum & Professional Development, Dracut P. S. (History)
Joan Turner, Director, Acton Cooperative Preschool, Acton (ELA, Mathematics, Arts)
Mary Villano, Lead Teacher, Dept. of Family & Consumer Sciences, Arlington P. S. (History)
Paloma Visscher, Student, Harvard Graduate School of Education, Cambridge (Science)
Beth Waldorf, Director of Early Childhood Curriculum, Jewish Community Centers of Greater Boston (ELA, Mathematics, Arts, Health)
Karen Walker, Principal, Dedham Public Schools/Consultant (Science, History)
Laurie Ward, Grant Specialist, Brockton Public Schools (Health)
Charles J. Washburn, Executive Director, VSA Arts of MA, Boston (Arts)

Mary-Jane Webster, Principal, Taunton Public Schools (ELA)
Christine Whitner, EDC, Newton (ELA, Science, History, Mathematics, Arts, Health, FL)
Mary Wile, Principal, Chicopee Public Schools/Consultant (Science, Mathematics, Health, FL)
Alison Wilson, K-1 Teacher, Neighborhood House Charter School, Dorchester, Boston (ELA)
Jeff Winokur, Wheelock College, Boston, and EDC, Newton (Science)
Sidney Worthen, Literacy Consultant, Westwood Public Schools (ELA)

ENDNOTES

Chapter 1: Introduction

1. Ackerman, Debra J., W. Steven Barnett, and Kenneth B. Robin. "Making the Most of Kindergarten: Present Trends and Future Issues in the Provision of Full-Day Programs," *Policy Report*, National Institute for Early Education Research (NIEER), 2005. Full text available at: http://nieer.org/resources/policyreports/report4.pdf.

2. All of the *Massachusetts Curriculum Frameworks* may be found at: http://www.doe.mass.edu/frameworks/current.html.

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